SPERRY

SPERRY VIDEO TERMINAL SVT-1220

User Guide

UP–11205 Rev. 1

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LIMITED WARRANTY

The following is the LIMITED WARRANTY provided to Sperry customers for the SPERRY SVT-1220.

1. The equipment is warranted to be in satisfactory working order for a period of ninety days after delivery, subject to the limitations in paragraph 2 below. Should any warranted item fail to be in satisfactory working order during its warranty period, Sperry will, at its option, repair or replace the defective item at no additional charge except as set forth in paragraph 2 below. Sperry will furnish replacements or repaired items on an exchange basis and they will be reconditioned or new. All replaced items become Sperry's property.

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   b. Call Sperry at the telephone number specified in the trouble-shooting section of this document. If the customer cannot locate this number, call the nearest Sperry Computer Systems office.

   c. During the telephone conversation, furnish Sperry the requested information.

d. If the item qualifies for service, the customer must do the following:

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(2) Fill in and submit with the failing item a form designated by Sperry for repair service.

(3) Bring or ship the failing item to the facility designated by Sperry. If it is brought to an over-the-counter (OTC) facility, it must be brought in during Sperry's normal working hours.

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(5) Sperry will perform the service. If the service is performed at an OTC facility, Sperry will notify the customer upon completion of the repair and the customer will pick up the serviced item promptly. If the service is performed at a CRS facility, Sperry will arrange for return shipment upon completion of repair. Sperry will pay non-premium shipping charges and bear the risk of loss or damage for the return shipment to locations in the continental United States, Hawaii, and Puerto Rico. Expedited shipment will be available at an additional charge.

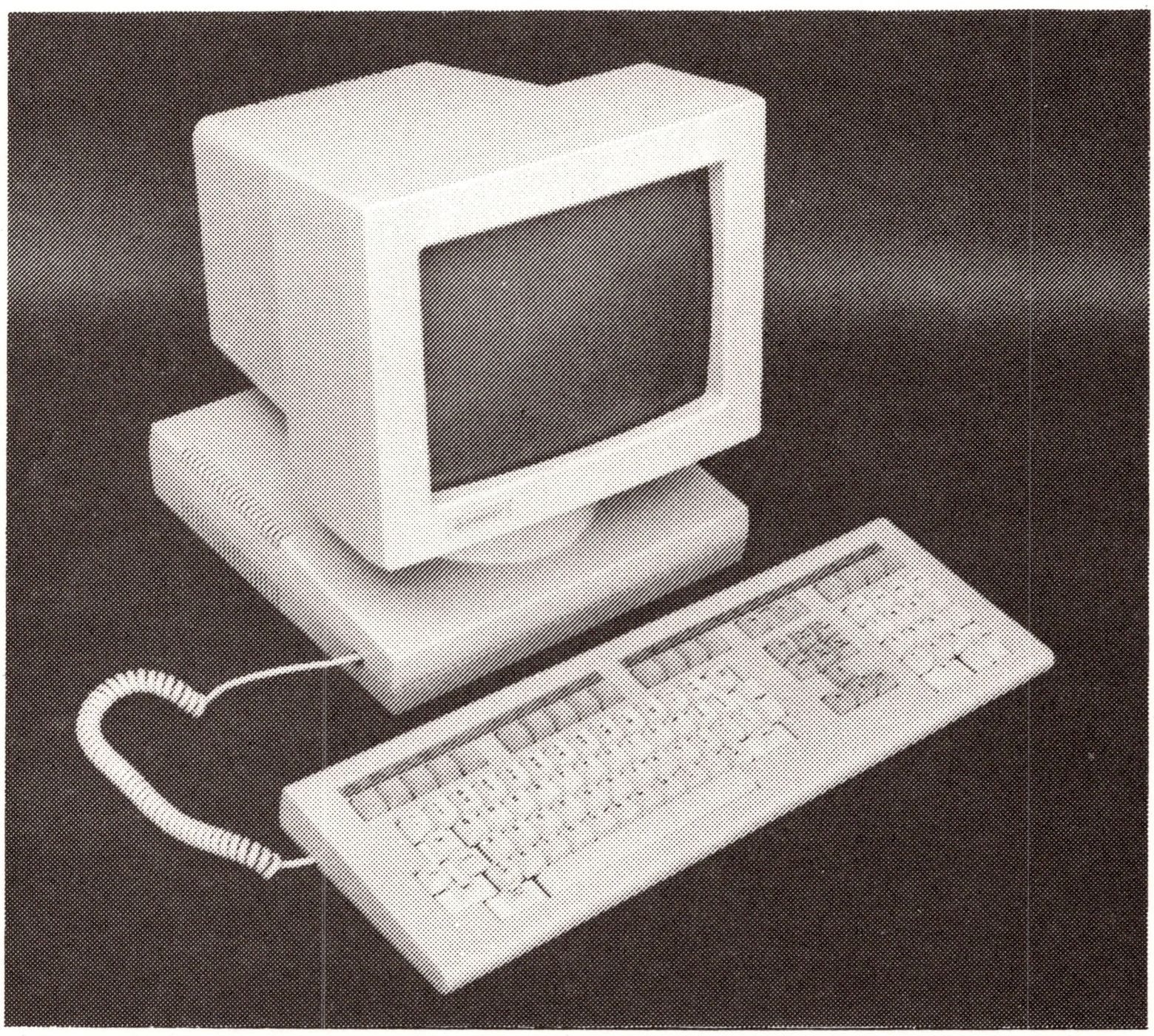
Preface

Terminal Components

The SPERRY Video Terminal 1220 (SVT-1220) is a data-entry device for use with host systems which operate with VT220*, VT100*, or VT52* terminals. The SVT-1220 keyboard allows you to enter data which is displayed on the screen and then sent to the host. An optional printer can be attached to the terminal to print from the host or the screen.

Physically, the SVT-1220 consists of two components:

- Display monitor (screen)
- Keyboard



*VT is a trademark of Digital Equipment Corporation.

Contents

The display monitor is on a tilt/rotate base which allows you to adjust the screen easily to a comfortable angle.

The low-profile keyboard is attached to the terminal base by a coiled cord, allowing you freedom in positioning the keyboard.

Contents

This manual provides a complete description of the SVT-1220. It is divided into two major parts: operator information, and programmer information. In addition, Appendixes A through E contain both. Part I contains the following basic operating information:

Chapter 1. Start Up
Chapter 2. Basic Functions
Chapter 3. Set-Up Screens
Chapter 4. Special Operations

If you are a terminal operator, refer to the appropriate operating manual for your host system for further instructions.

Part II, for programmers, provides the following information:

Chapter 5. Operating Modes
Chapter 6. Character and Control Codes
Chapter 7. Character Set Commands
Chapter 8. Keyboard Codes
Chapter 9. Terminal Mode Commands
Chapter 10. Display Commands
Chapter 11. Miscellaneous Commands
Chapter 12. Printing
Chapter 13. Communications

Appendixes A through E contain:

A. SVT-1220 National Keyboards
B. Using National Keyboards
C. Interfaces
D. SVT-1220 Specifications
E. VT52 Mode Control Sequences

Refer to your host system documentation for further information.

Reference Aids

In addition to the general table of contents at the beginning of the book, each chapter is preceded by a detailed table of contents printed on heavy beige paper.

The chapter name is contained in the blue box printed on the edge of each page to make it easy for you to flip through the book to the desired chapter. The full chapter title is on each right-hand page, and the topic of the current section is on the top of each left-hand page.

An extensive index is included to make it easier to find information. The main reference for each item is in bold type.

The color blue is used to call attention to important information. For example, in the operator sections, blue is used for feature names; in the programmer sections, blue is used for command sequences.

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Chapter 1. Start Up

1.1. Installing the Terminal

1. Verify that the power switch on the back of the terminal base (Figure 1–1) is turned to OFF.

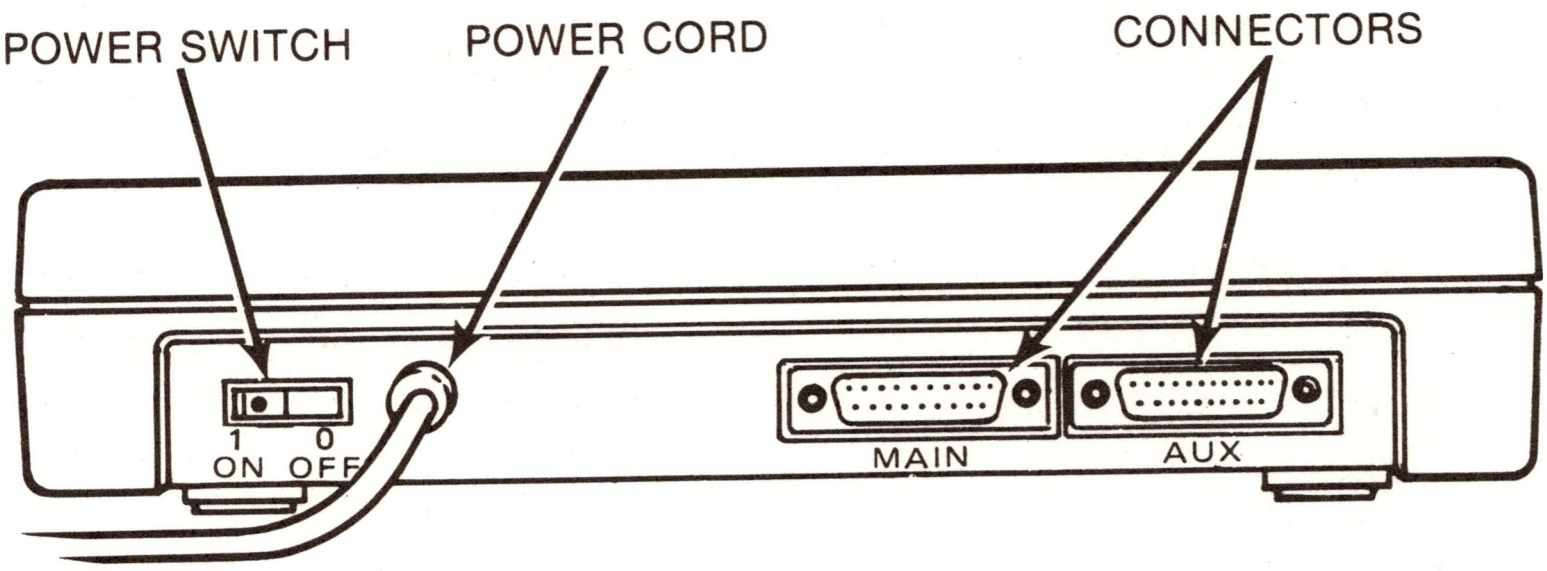


Figure 1–1. Rear View of Terminal Base

2. Plug the coiled keyboard cord into the connector on the left side of the terminal (Figure 1–2).

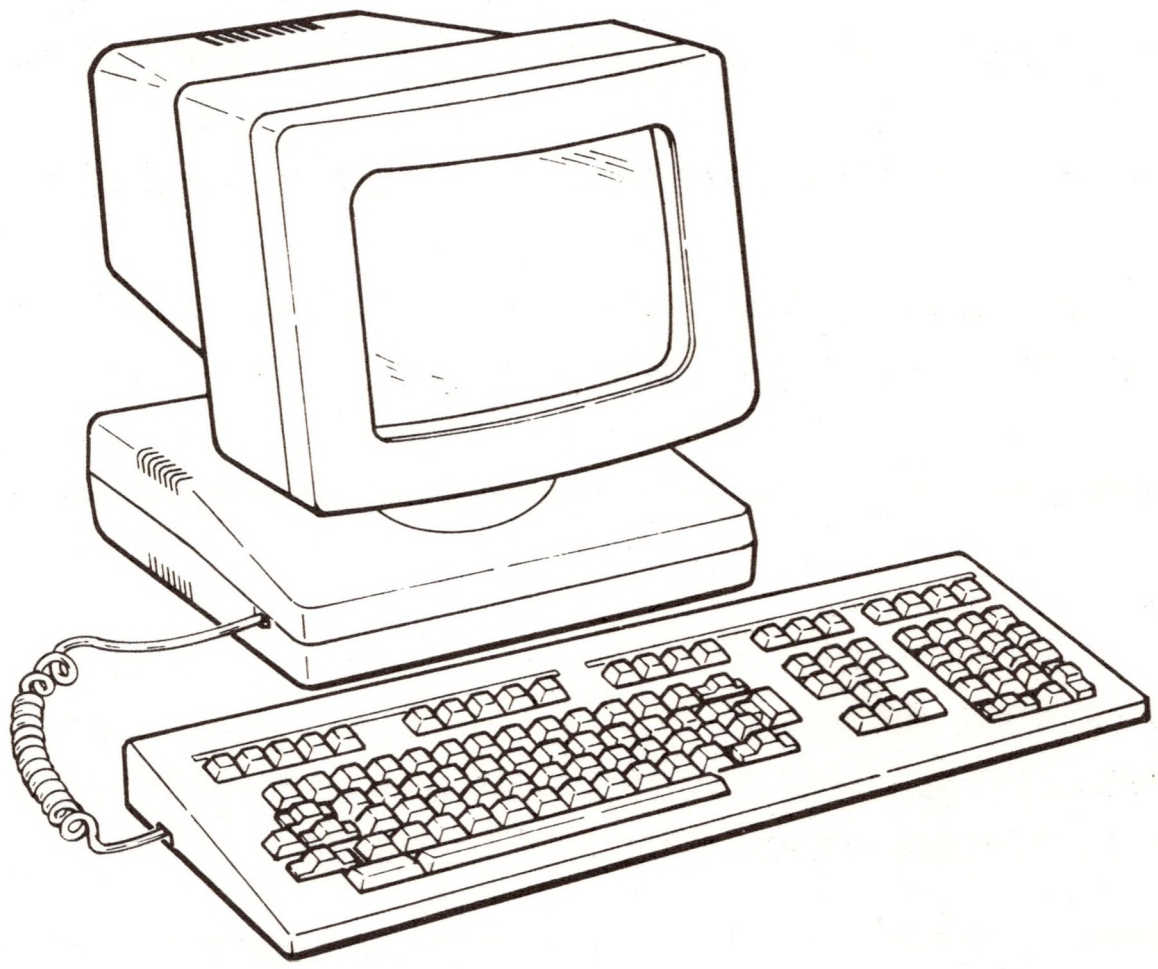


Figure 1–2. SVT-1220 Display Monitor and Keyboard

Installing the Terminal

3. Determine how your terminal is to be connected by checking the host system installation guide, asking your system programmer, or referring to section 5.1 for more information on communications modes. The choices are:

If Connected To:	Use Connector:
One host system	MAIN or AUX
Two host systems	MAIN and AUX
One host system and one printer	MAIN for host; AUX for printer

4. If a printer is to be attached to the terminal, connect the host communications cable to the MAIN connector and the printer cable to the AUX connector at the rear of the terminal base.

5. If the terminal is to be connected to one host system with no printer, connect the host communications cable to either the MAIN or the AUX connector.

6. If the terminal is to be connected to two host systems, connect the first host communications cable to the MAIN connector and the second cable to the AUX connector.

7. Connect the terminal power cord to a grounded ac outlet.

8. Swivel the display monitor right or left and tilt it up or down to the best angle for easy viewing.

NOTE:

Terminal installation is not complete until the characteristics required for host communications are set up according to the procedures described in Chapter 3.

1.2. Turning on the Terminal

1. Turn the power switch on the back of the terminal to ON.

   The terminal automatically performs a power-on self-test. If the terminal passes the tests and is ready for operation, the following message is displayed in the center of the screen:

```
SVT-1220 OK
```

   The "OK" message is removed when you press any key.

2. If any of the messages shown in Table 1–1 is displayed, the terminal is not ready, and corrective action is required. Refer to section 1.3.

1.3. Troubleshooting

The terminal self-test identifies several possible problems. Table 1–1 shows the self-test error messages and the suggested corrective actions. Table 1–2 identifies other symptoms which may occur and the actions suggested to correct them.

If a problem occurs, perform the appropriate corrective action, and then run the self-test by turning the power off and then on. If the problem is still present, call your local Sperry Support Center.

In the continental U.S., call toll free:

1-800-328-0440

In Minnesota and Canada, call collect:

624-631-8264

Table 1–1. Self-Test Error Messages

Error Message	Corrective Action
KBD ERROR	Turn the power off. Plug the keyboard cord into the connector on the side of the terminal. Turn the power back on.
ROM ERROR	Turn the power off and then on.
ARAM ERROR	Turn the power off and then on.
CRAM ERROR	Turn the power off and then on.
SRAM ERROR	Feature settings stored in the terminal nonvolatile RAM (NVR) memory have been returned to their default values; these may not be the values under which you need to operate. Display the set-up screens (Chapter 3) and follow the instructions for setting up the terminal (section 3.2).

Table 1–2. Other Possible Problems

Symptom	Possible Cause and Corrective Action
Screen is blank; Power indicator* on keyboard is lit.	CRT saver feature has blanked screen. Press any key. If screen is still blank, turn brightness control* clockwise.
Terminal does not turn on when power switch* is pressed.	Check that ac power cord is plugged into outlet.
Keyboard doesn't respond; Wait indicator* on keyboard is lit.	Host computer does not respond or has locked the keyboard. Select "Clear Comm" on the set-up directory screen (section 3.4). If problem persists, check that your host system is working.
Garbled characters or error symbols are displayed.	Certain terminal settings may be incompatible with your host system. Display the set-up screens and check the settings required for host communications (section 3.2).

* Controls and indicators are described in section 2.3.

1.4. Maintaining the Terminal

Terminal surfaces may be cleaned with soap and water or any mild detergent. Do not use cleaners containing solvents.

Clean keys with a dry or slightly moist cloth. Do not remove the keycaps to clean them since the keycap switches can be damaged if the keycaps are replaced incorrectly.

Keep the ventilation slots clear. Blocking the slots by placing objects on top of or under the terminal may cause it to overheat.

WARNING:

Turn off terminal power and unplug the power cord before cleaning the terminal.

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Chapter 2. Basic Functions

2.1. Terminal Operation

Since the SVT-1220 is designed for use with host software applications which determine most of what you can do with the terminal, this chapter provides only brief descriptions of the basic functions of the SVT-1220. The text identifies functions which are affected by the host; otherwise, the capabilities are always available.

Terminal Types

The SVT-1220 can emulate VT220, VT100, or VT52 terminal operations. These types of operation, which affect both how the terminal communicates with the host and the functions that the terminal performs, are called modes (e.g., VT100 mode). The operator selects the terminal type that fits the needs of the host system (see section 3.2).

Character Sets

The SVT-1220 is a multilanguage terminal which supports the following character sets in addition to American English:

British	German
Canadian (French)	Italian
Danish	Norwegian
Dutch	Spanish
Finnish	Swedish
Flemish	Swiss (French)
French/Belgian	Swiss (German)

In multinational character set mode, the full SVT-1220 multinational character set is available. The character set, shown in Table 2–1, includes all the national alphabetic characters plus special punctuation and word processing symbols. Regardless of which keyboard you have, you can enter any character shown in Table 2–1, as explained in section 4.1.

In national character set mode, each keyboard is associated with a specific character set which is a subset of the full SVT-1220 multinational character set. Appendix B contains the national character set tables and additional information on national character set mode.

Table 2–1. SVT-1220 Standard Character Set

Any Mode						VT200 Mode Only					
SP	0	@	P	`	p		°	À		à	
!	1	A	Q	a	q	¡	±	Á	Ñ	á	ñ
”	2	B	R	b	r	¢	²	Â	Ò	â	ò
#	3	C	S	c	s	£	³	Ã	Ó	ã	ó
$	4	D	T	d	t			Ä	Ô	ä	ô
%	5	E	U	e	u	¥	µ	Å	Õ	å	õ
&	6	F	V	f	v		¶	Æ	Ö	æ	ö
’	7	G	W	g	w	§	•	Ç	Œ	ç	œ
(	8	H	X	h	x	¤		È	Ø	è	ø
)	9	I	Y	i	y	©	¹	É	Ù	é	ù
*	:	J	Z	j	z	ª	º	Ê	Ú	ê	ú
+	;	K	[	k	{	«	»	Ë	Û	ë	û
,	<	L	\	l	|		¼	Ì	Ü	ì	ü
–	=	M	]	m	}		½	Í	Ÿ	í	ÿ
.	>	N	^	n	~			Î		î	
/	?	O	_	o	DEL		¿	Ï	ß	ï	

Additional character sets are available under host control (section 6.2). If your operation uses these character sets, your system supervisor will provide instructions on which keys to use for special characters.

Set-Up Screens

The SVT-1220 supports a wide range of selectable characteristics (features) from which you choose those that suit your host system and your own preferences. The choice of features is made on a series of special screen displays called set-up screens (see Chapter 3). Each set-up screen is a menu from which you select the desired characteristics.

The set-up screens must be used to complete the installation of your terminal; thereafter, they can be displayed any time you need to change characteristics.

Communications Modes

The terminal is always in one of three communications modes, described in more detail in section 5.1:

- **Local** — No host communications.
- **Online** — Communications with host system; keystrokes are sent immediately to the host.
- **Edit Online** — Same as online, except that keystrokes are not sent to the host until the operator presses the ENTER key.

The communications mode determines what happens when you press most keys. When the terminal is in local operation, data is displayed on the screen as you type it, and many of the function keys perform the function indicated on the keycap. For example, the TAB key moves the cursor to the first tab stop on the line.

Terminal Operation

When the terminal is online, each keystroke is sent immediately to the host, and the host program determines the function or character transmitted by each key.

If the terminal is set for edit online mode, characters are not transmitted to the host until you press the ENTER key. This allows you to edit the data (see section 4.3).

Display Screen

The SVT-1220 display screen contains 24 lines of data. You choose the number of characters per line (80 or 132). You also select whether or not a cursor will be displayed to show you where the next character will be entered. If you select a displayed cursor, you choose the shape of the cursor: an underline or a solid block.

Usually the entire screen is used for data entry and printing; however, the host can limit the area by establishing a scrolling region. The scrolling region, which can be anywhere on the display, is the area in which the cursor can be moved.

Data Entry Aids

Terminal features allow you to control several aspects of data entry.

Character Wraparound

The wraparound feature determines whether the character typed overwrites the last position of the line (wraparound off) or is placed in the first position of the next line (wraparound on).

Autorepeating Keys

If autorepeating is on, a key that is held down for more than one-half second repeats rapidly. Key cycling is slower if the host transmit speed is less than 2400 baud. The autorepeat feature does not affect the following keys:

HOLD SCREEN	PRINT SCREEN
SET-UP	DATA/TALK
BREAK	COMPOSE CHARACTER
RETURN	CTRL and any key
SHIFT	CAPS LOCK

Audible Keyclick and Margin Bell

An audible keyclick can be turned off or on, as can an alarm tone which sounds when the cursor is eight positions from the right margin.

2.2. Keyboards

The SVT-1220 supports 15 versions of a 105–key keyboard. Figure 2–1 shows the North American version. The function keys (white) perform the same functions on all keyboard versions, although the keycap labels change to correspond to the language. The data (character) keys are shaded in the figure. Characters generated and data key locations vary among the 15 keyboards (see Appendix A for keyboard layouts, and Appendix B for information on using the national keyboards).

The keyboard type feature on the set-up directory screen (section 3.4) determines which character set is displayed, not necessarily the one shown by the labels on the keyboard. For example, if you are using the North American keyboard and set the keyboard type feature to "Canadian (French) Keyboard," the French Canadian characters will be displayed, just as if you were using a keyboard with French Canadian keycap labels.

NOTE:

This manual describes the use of the North American keyboard. Appendix B contains information on the other keyboards.

Since the host system controls the use of many keys, only a brief discussion of the keyboard is presented here. Refer to the specific operating instructions for your system to determine how individual keys function. Codes generated by the keys under various modes of operation are defined in Chapter 8.

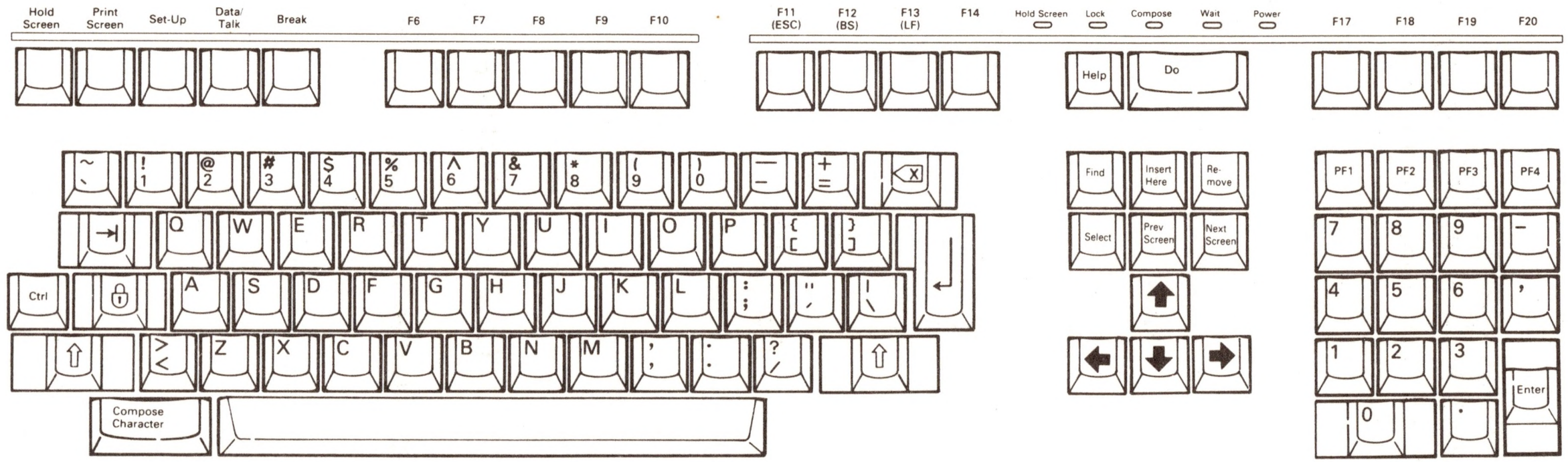
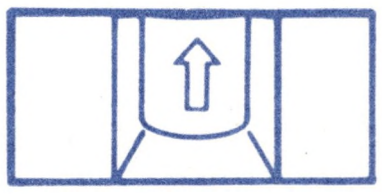


Figure 2–1. SVT-1220 Keyboard, North American Version

2. BASICS

Symbol Key Names

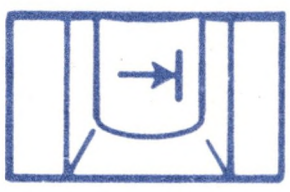
To minimize the differences between the 15 keyboard versions, several frequently-used keys are labeled with symbols rather than words. These keys shown with their names are:



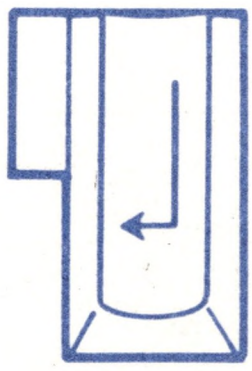
SHIFT



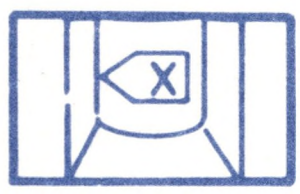
SHIFT LOCK



TAB



RETURN



DELETE



SCAN LEFT*



SCAN RIGHT*



SCAN UP*



SCAN DOWN*

* These four keys are referred to as the cursor scan keys.

Keypads

The keyboard contains an editing keypad and a numeric keypad.

The editing keypad (Figure 2–2) contains the four cursor scan keys, which move the cursor in the direction indicated by the arrow. The other six keys are normally used to edit data; their functions (and that of the DELETE key) are determined by host applications.

The numeric keypad at the far right of the keyboard (Figure 2–3) allows numbers to be entered in calculator fashion. If the terminal is set for "Numeric Keypad" (section 3.6), the keypad generates the same data characters as the numeric keys on the main keyboard, and the ENTER key corresponds to the RETURN key. If the terminal is set for "Application Keypad," host programs assign special functions to the keypad keys.

Keys PF1 through PF4 on the numeric keypad have no use in local mode. In online modes, their use is determined by the host system. In edit mode, PF1 through PF4 are redefined as editing keys (see section 4.3).

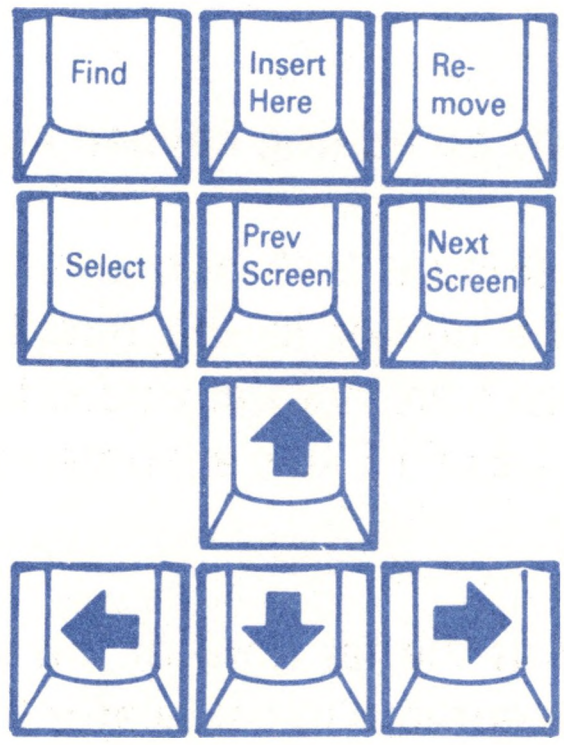


Figure 2–2. Editing Keypad

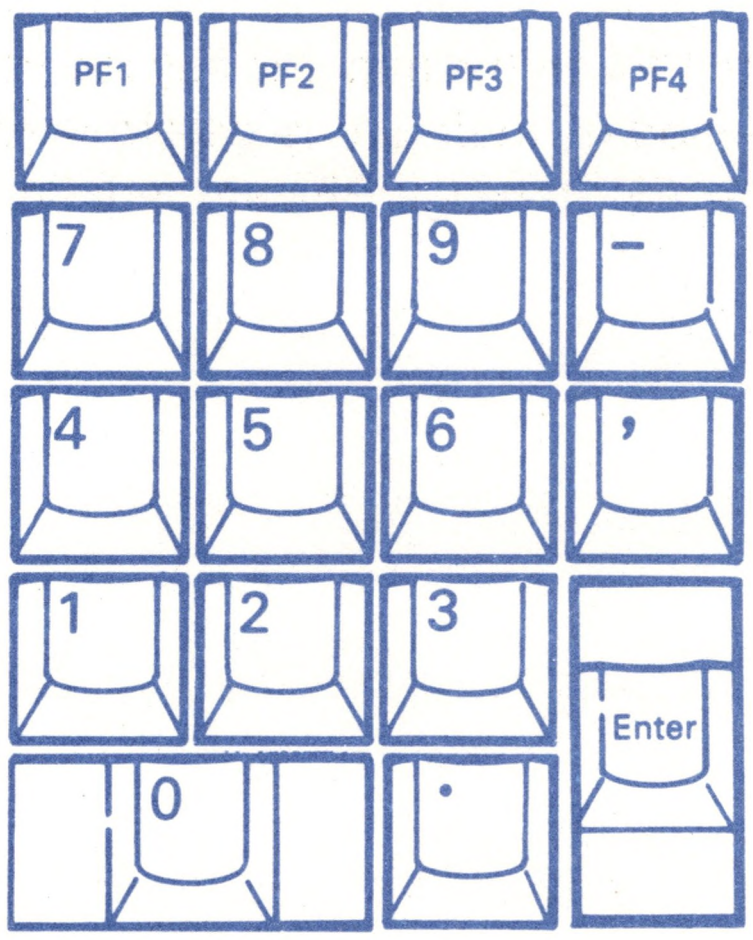
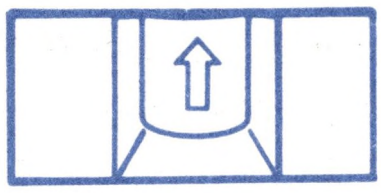


Figure 2–3. Numeric Keypad

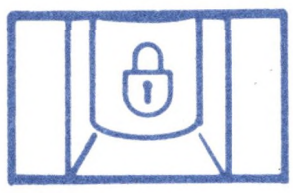
Modifier Keys



The SHIFT key works like a typewriter SHIFT key to select the uppercase letters or top characters on data keys.



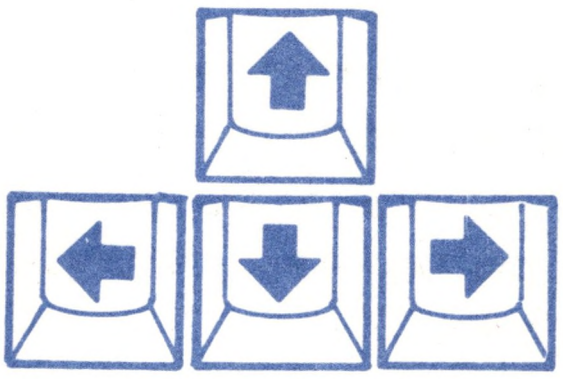
The CTRL key is a modifier key which must be held down while another key is pressed. When the CTRL key is pressed with another key, a special code is transmitted.



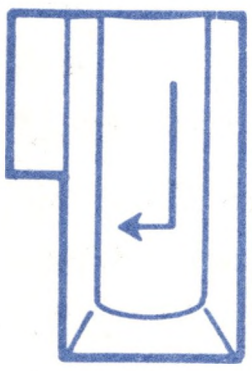
The CAPS LOCK key allows entry of uppercase letters or top characters without using the SHIFT key. The caps lock feature on the keyboard set-up screen (section 3.9) determines whether the locked state affects all data keys or only the alphabetic keys. The Lock indicator (section 2.3) lights when the terminal is locked in uppercase.

Cursor Control Keys

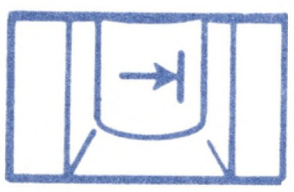
When the terminal is in local or edit mode, the cursor control keys are implemented to perform the function indicated on the keycap.



The cursor scan keys move the cursor in the direction indicated by the arrows.



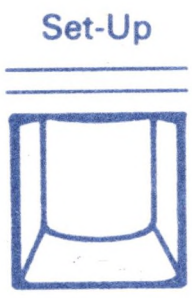
The RETURN key moves the cursor to the beginning of the next line if the new line feature (section 3.6) is on; otherwise, it moves the cursor to the first position of the same line.



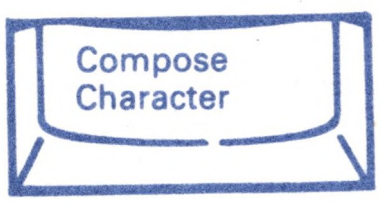
The TAB key moves the cursor to the first tab stop, or to the right margin if there is no tab stop.

Standard Function Keys

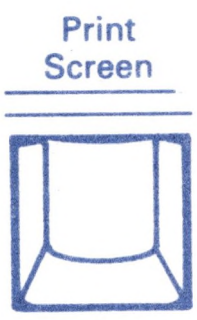
The standard function keys perform the described functions whether the terminal is in online or local operation mode.



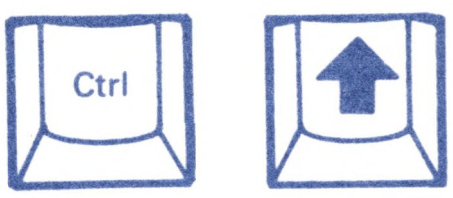
The SET UP key displays and removes the set-up screens (see Chapter 3).



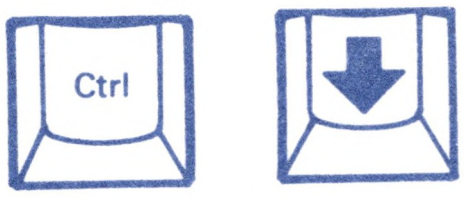
The COMPOSE CHARACTER key generates characters that are in the SVT-1220 character set (Table 2–1) but are not shown on your keyboard. Section 4.1 explains how to compose characters.



The PRINT SCREEN key sends the text on the screen to the printer, or sets autoprint mode (see section 4.2).



CTRL SCAN UP increases the smooth scroll rate, the same as changing the smooth scroll feature (section 3.5). The rates form a loop, so repeated pressing of this key cycles the rate from the highest rate back to the lowest.



CTRL SCAN DOWN decreases the smooth scroll rate, the same as changing the smooth scroll feature (section 3.5). The rates form a loop, so repeated pressing of this key cycles the rate from the lowest rate back to the highest.

Program Function Keys

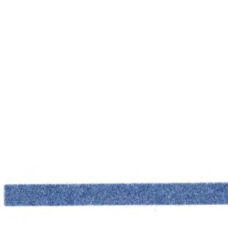
Keys F6 through F20 on the top row of the keyboard are called program function keys or F-keys, because they are implemented only by host programs, certain terminal modes, or special operator functions. Otherwise, these keys send codes to the host (if the terminal is online) but do not perform functions.

Each program function key is associated with two codes: a standard key code (defined in section 8.2) and an optional user-defined key code. The user-defined key code can be supplied by the host (section 8.5) or by the operator (section 4.4). The F-key shift feature (section 3.11) determines whether the standard key code or the user-defined code is produced by using the SHIFT key; the other code is generated by the unshifted key.

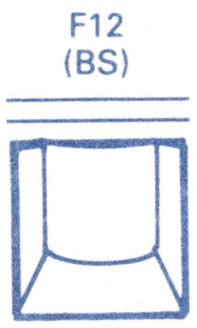
In VT100 and VT52 modes, keys F11 (ESC), F12 (BS), and F13 (LF) are implemented as described in the next section. In edit mode, keys F17 through F20 are redefined as editing keys (see section 4.3).

VT100/VT52 Keys

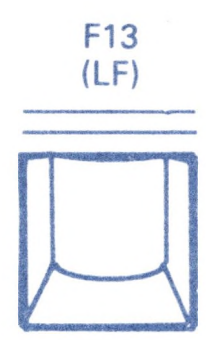
The following keys on the top row of the keyboard are user program (application) keys when the terminal is in VT200 mode, and function keys when the terminal is in VT52 or VT100 modes. The VT100 F-keys feature (section 3.11) can be used to make F11, F12, and F13 user program keys.



In VT100 or VT52 mode, this key generates an ESC character, which is the first code in a command sequence (see section 6.3). If the terminal is in local operation and you type a valid ESC sequence, the function is performed (for example, erase to end of line).



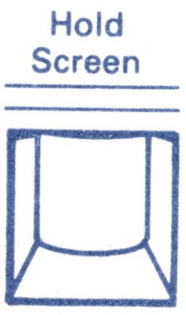
In VT100 or VT52 mode, this key generates a backspace (BS) character. If the terminal is in local operation, the cursor is moved left one position.



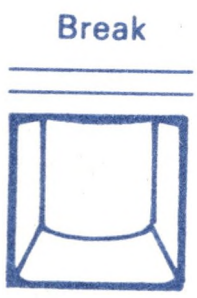
In VT100 or VT52 mode, this key generates a line feed (LF) character. If the terminal is in local operation, the cursor moves down one line.

Online Function Keys

The online function keys are used when the terminal is online to the host.



HOLD SCREEN can be used to hold data that the host is sending so rapidly that it scrolls off the screen before it can be read. When you press HOLD SCREEN, the screen display freezes, and the Hold Screen indicator (section 2.3) lights. Pressing the key again returns the screen to normal operation.



The BREAK key is used only while the terminal is online to the host. If breaks are enabled (break key feature, section 3.9), pressing BREAK transmits a break message to the host.

SHIFT BREAK initiates a disconnect from the modem (see section 13.2).

CTRL BREAK sends the answerback message to the host.

2.3. Controls and Indicators

The SVT-1220 has controls for power and screen brightness. In addition, the terminal provides three types of indicators: keyboard indicator lights, audible tones, and a status line.

Controls

Power. The power switch is located at the right rear of the terminal base (Figure 2–4).

Brightness. The screen brightness control is located on the right side of the display monitor, just above the terminal base, as shown in Figure 2–4. Turn the control clockwise to make the display brighter, and counterclockwise to dim it.

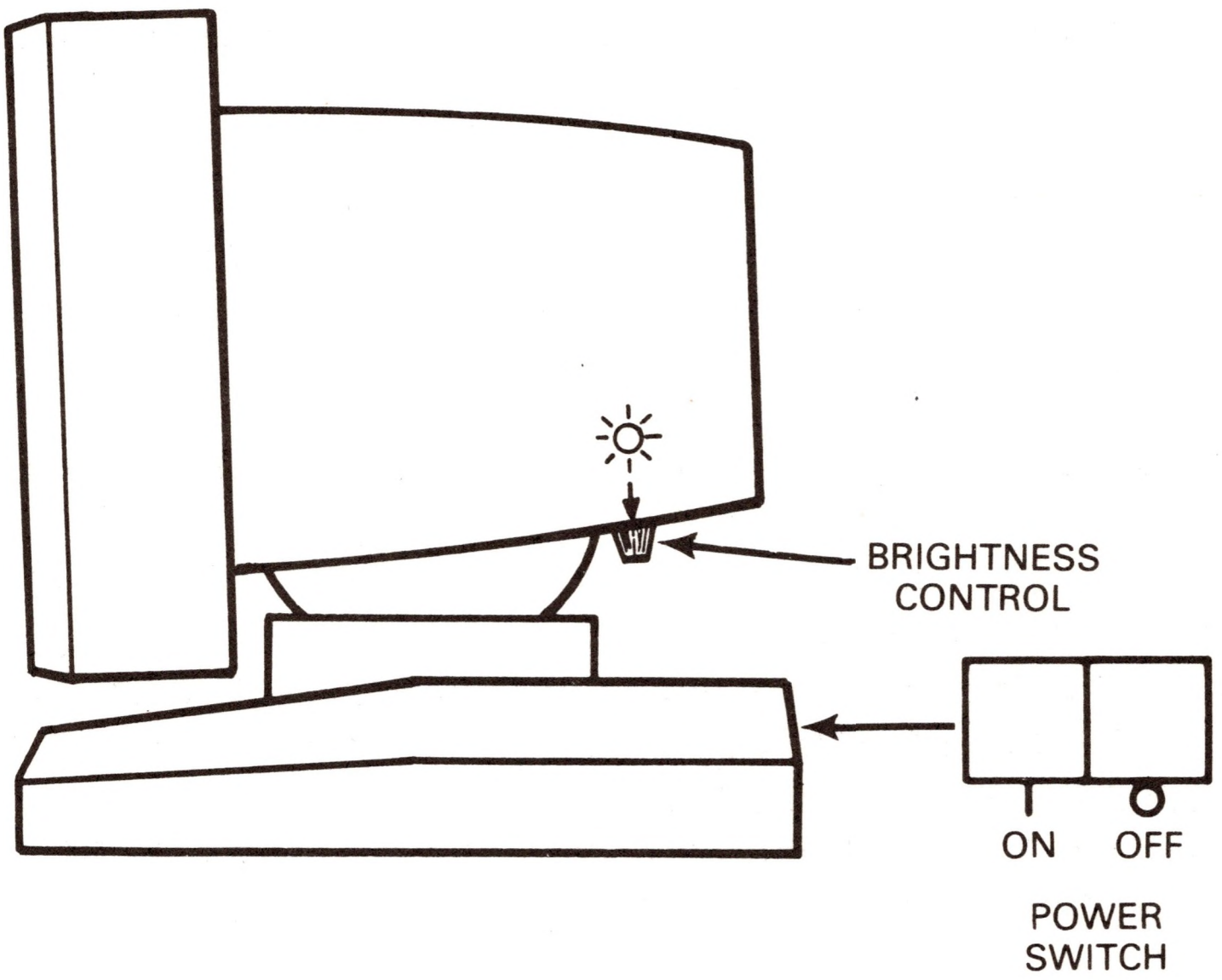


Figure 2–4. Controls

Keyboard Indicator Lights

The keyboard indicator lights are shown in Figure 2–5 .

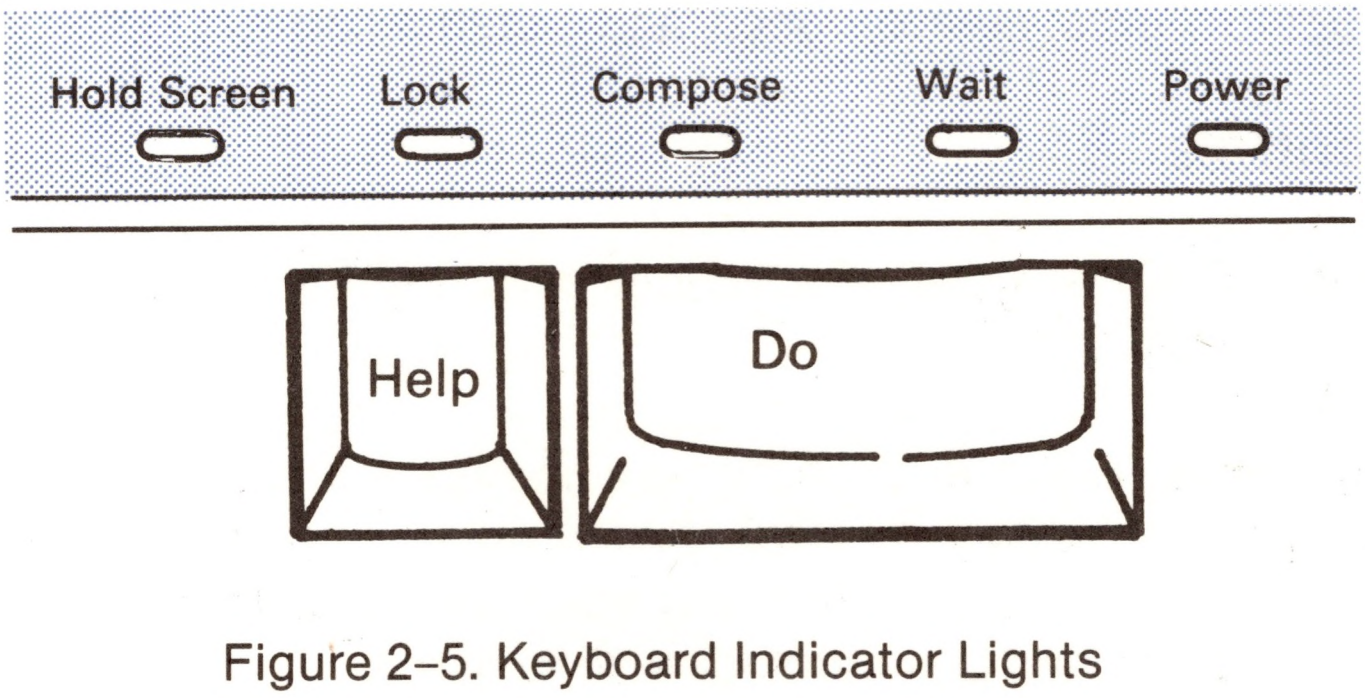


Figure 2–5. Keyboard Indicator Lights

Hold Screen. Lights when the HOLD SCREEN key (section 2.2) is pressed to freeze the screen display.

Lock. Lights when the CAPS LOCK key is locked; indicates that characters entered from the keyboard will be uppercase letters or top characters according to the setting of the caps lock feature (section 3.9).

Compose. Lights while you enter a compose character sequence (section 4.1).

Wait. Lights when the host locks the keyboard, prohibiting data entry. The following keys are not locked: HOLD SCREEN, PRINT SCREEN, SET-UP, BREAK, DATA/TALK. If the light remains on for more than a few seconds, there are communication problems with the host. To unlock the keyboard, display the set-up directory screen (section 3.4) and select "Clear Comm."

Power. Lights when the terminal power switch is turned to ON.

Audible Indicators

Keyclick. A keyclick sound occurs whenever you press a key (except SHIFT or CTRL). You can turn the keyclick off through the keyclick feature (section 3.9).

Bell. A bell sounds once to indicate the following conditions:

The terminal has passed the power-on self-test.

The cursor is eight characters from the right margin and the margin bell feature is on (section 3.9).

You have made a mistake while entering a compose character sequence (section 4.1).

The BEL code has been received from the host.

Status Line

The terminal status line is displayed at the bottom of the set-up screens (Chapter 3). Press the SET-UP key to display the status line. The status line always presents two items of information: the data entry mode and printer status. Modem status is displayed only if "Main Port, Modem Control" is selected for the main port feature (section 3.7). Table 2–2 defines each status message.

The data entry mode, which is established by a host command (section 9.3), determines what happens during normal text operation when you enter characters or the host sends data to the screen.

The printer messages define printer status.

Table 2–2. Status Line Messages

Message	Meaning
Replace Mode	Each new display character replaces the old character at the cursor position (this is the normal operating mode).
Insert Mode	Each new character is inserted at the cursor position, and all old characters on the line to the right of the cursor are shifted right. Characters shifted past the right margin are lost.
Printer: Ready	Printer is ready.
Printer: Not Ready	Printer is not ready.
Printer: None	No printer is available
Printer: Auto	Terminal is in autoprint mode (see section 4.2).
Printer: Controller	Host controls terminal printing (see section 4.2).
Modem: DSR,Data	Modem is ready to send or receive.
Modem: No DSR,Data	Modem is not ready to send or receive.
Modem: DSR,Connected	Modem is ready and is connected to the host.

Chapter 3. Set-Up Screens

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3.3. Using the Set-Up Screens 3–5

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Chapter 3. Set-Up Screens

3.1. Terminal Features

Chapter 3 describes the SVT-1220 set-up screens which you use to check or change terminal operating features such as keyboard nationality, host communications speed and parity, and cursor type. The SVT-1220 has a nonvolatile RAM memory (NVR) which permanently stores the selected features, even if terminal power is turned off. In addition to the permanent memory, the terminal also has a temporary memory so that you can temporarily change a feature and later return to the stored setting.

Each feature is set to a predetermined value (default setting) until the operator selects a different setting.

Terminal Features

The features listed in Table 3–1 have no impact on host operations and can be changed by the operator at any time. Most of the other features must be set to match host operations as part of terminal installation (section 3.2), and are usually not changed thereafter.

Table 3–1. Operator Features

Feature	Screen	Section
Set-Up Language Keyboard Type	Set-Up Directory	3.4.
Scroll Rate Smooth Scroll Speed CRT-Saver Delay Cursor Type Screen Background Refresh Rate	Display Set-Up	3.5.
User Key Definitions	General Set-Up	
Data Processing Symbols Caps Lock Autorepeat Keyclick Margin Bell Warning Bell Break Key Answerback Concealed	Keyboard Set-Up	3.6.
Setting and Clearing Tab Stops	Tab Set-Up	3.10.
F-Key Shift	Enhancements Set-Up	3.11.

Unless you perform a save operation (section 3.12), any changes you make are temporary and will be replaced by the permanent settings when terminal power is turned off, a recall operation is performed, or the terminal is set to default values.

3.2. Completing Terminal Installation

Terminal installation is not complete until you have established the settings required for your terminal to communicate with the host and with the printer, if one is attached. Table 3–2 identifies the features which must be set correctly for host communications. Refer to the host system installation guide or ask your system programmer for the correct settings.

To complete terminal installation, perform the following steps:

1. Determine which settings are required for your system (Table 3–2 tells you which ones to check).

2. Display the appropriate set-up screens and check the current option for each required feature. Change the option if necessary.

3. If a printer is attached to the terminal, determine the required settings for the printer. Then display the printer set-up screen (section 3.8), check the current options, and make any necessary changes.

4. To make changes permanent so they will be in effect the next time you turn the power on, display the set-up directory screen and select the "Save" option (section 3.12). The settings will then be stored in the terminal's NVR memory.

NOTE:

If the "SRAM ERROR" message is displayed when you turn power on (section 1.3), the permanent settings have been changed to their defaults. In this case, perform steps 1 through 4.

Table 3–2. Features Which Affect Host Communications

Feature	Screen	Section
Communications Mode	Set-Up Directory	3.4.
Screen Size Display Control Codes Autowrap	Display Set-Up	3.5.
Terminal Type Terminal ID Lock Key Definitions Lock Features Keypad Codes Cursor Key Codes New Line Character Set	General Set-Up	3.6.
Host Transmit Speed Host Receive Speed XOFF Host Bit/Parity Host Stop Bits Local Echo Main Port Modem Disconnect Limited Transmit	Communications Set-Up	3.7.
AUX Speed AUX Bit/Parity AUX Stop Bits } Affect host on AUX connector	Printer Set-Up	3.8.
Auto-Answerback Answerback Message	Keyboard Set-Up	3.9.
Main Received XOFF VT100 F-Keys Space Suppression Transmit Area Transmit Execution	Enhancements Set-Up	3.11.

3.3. Using the Set-Up Screens

To display the first set-up screen, press the SET-UP key. The data that was on the original screen will be saved and the set-up directory screen (Figure 3–1) will appear. The set-up directory allows you to select any of the other seven set-up screens, perform various operations (such as saving changes), and make basic choices about terminal operation.

NOTE:

"Original screen" refers to the displayed data which is stored temporarily while the set-up screens are displayed. Normally the original screen is redisplayed when the set-up screens are removed. However, some options when selected on the set-up screens erase the original screen.

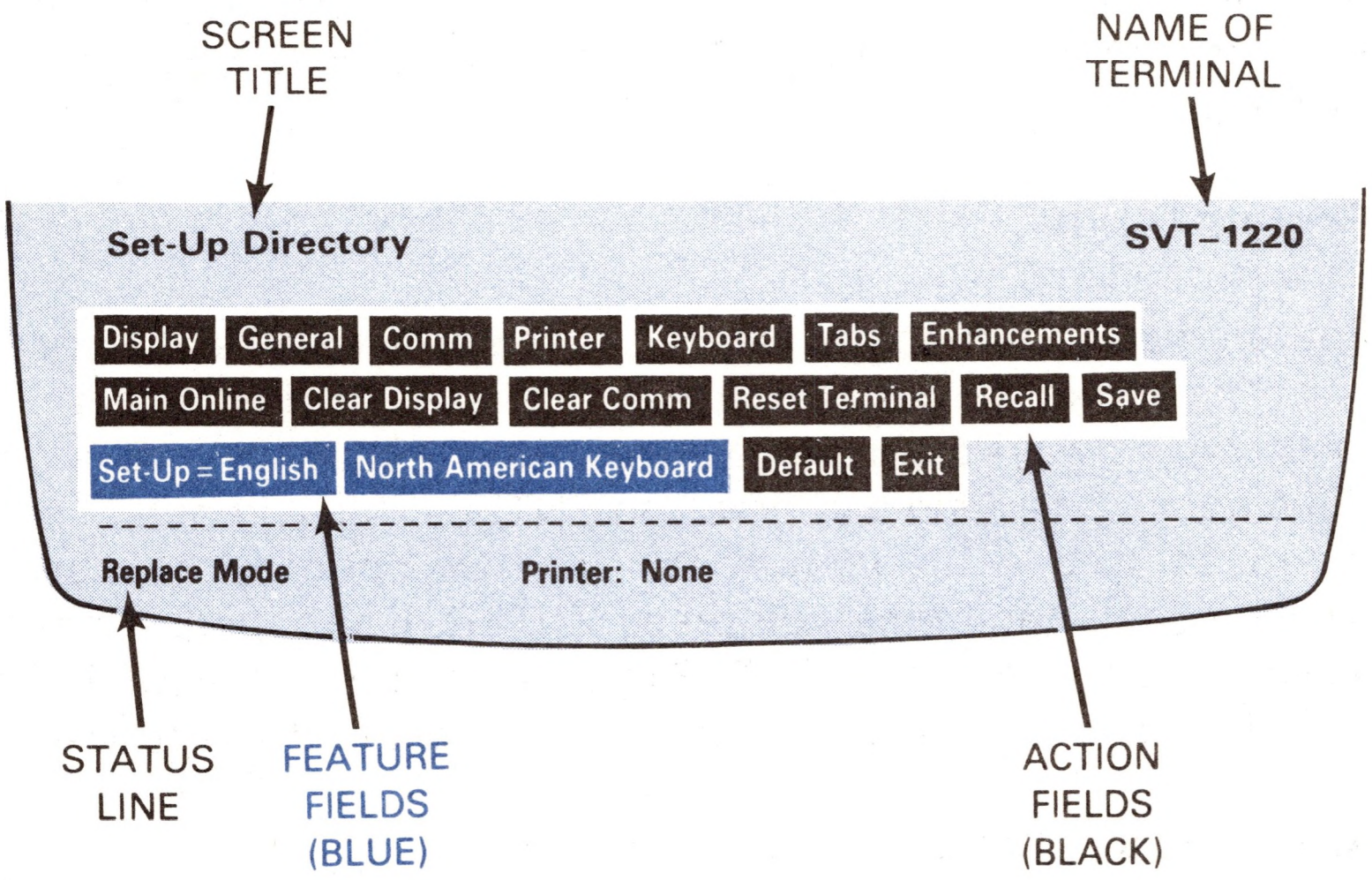


Figure 3–1. Illustration of Set-Up Screens

To remove a set-up screen, press the SET-UP key again (on any screen) or select the "Exit" option on the set-up directory screen (section 3.4). Changes are stored only temporarily unless you perform a save operation (section 3.12) before exiting.

Screen Structure

As Figure 3–1 illustrates, the set-up screens are formatted into several standard areas. The top half of the display is blank. The first line of the set-up screen contains the screen title and the name of the terminal. The bottom line contains the status line (described in section 2.3). The middle area of the display consists of action fields and feature fields.

Action Fields

An action field defines an action, such as "Exit." The field has only one choice, and the wording never changes. When you move the cursor to that field and press ENTER, the action is performed. Note that on the set-up screens, the size of the cursor matches the field in which it is located. In the pictures of the screens (sections 3.4 through 3.11), the action fields are printed in black.

Feature Fields

Feature fields, printed in blue, define the options for each feature. The current setting for the feature (the setting in temporary memory) is always displayed. You change the setting by moving the cursor to the field and pressing ENTER. The next option is then displayed. If the feature has only two options, the messages switch each time you press ENTER. If the feature has several options, pressing ENTER cycles the cursor through the complete list of options eventually returning it to the first one.

An option is selected by leaving it displayed.

Example: Changing a Feature

To change the screen background feature (display set-up screen, section 3.5):

1. Position the cursor on the currently displayed option for the screen background feature (Light Text, Dark Screen or Dark Text, Light Screen).

2. Press ENTER. The option will change from Light Text, Dark Screen to Dark Text, Light Screen (or vice versa).

   The displayed setting will remain in effect until terminal power is turned off, a recall operation is performed, or the terminal is set to default values. You must perform a SAVE operation (section 3.12) to store the changed setting permanently.

Keys Used on Set-up Screens

While the set-up screens are displayed, only the following keys can be used:

The SET-UP key displays or removes the set-up screens.

The cursor scan keys move the cursor to the desired field.

The ENTER key either selects the action or causes the next option to be displayed, depending on the type of field you are in.

If you press an invalid key, the following message is displayed on the status line:

Press ENTER to take this action - Press Cursor Key to move.

Accessing a Specific Screen

The set-up directory screen is always displayed when you press the SET-UP key. You can access any of the individual set-up screens listed on the first row of the directory screen (Figure 3–1) by placing the cursor on the screen name and pressing ENTER.

On the seven individual screens, the first two fields are always:

To Next Set-Up To Directory

Choosing "To Next Set-Up" displays the next set-up screen. Figure 3–2 shows the order in which the screens are displayed using this method. Notice that the display set-up screen follows the enhancements set-up screen, forming a loop. You must use the "To Directory" field to redisplay the set-up directory.

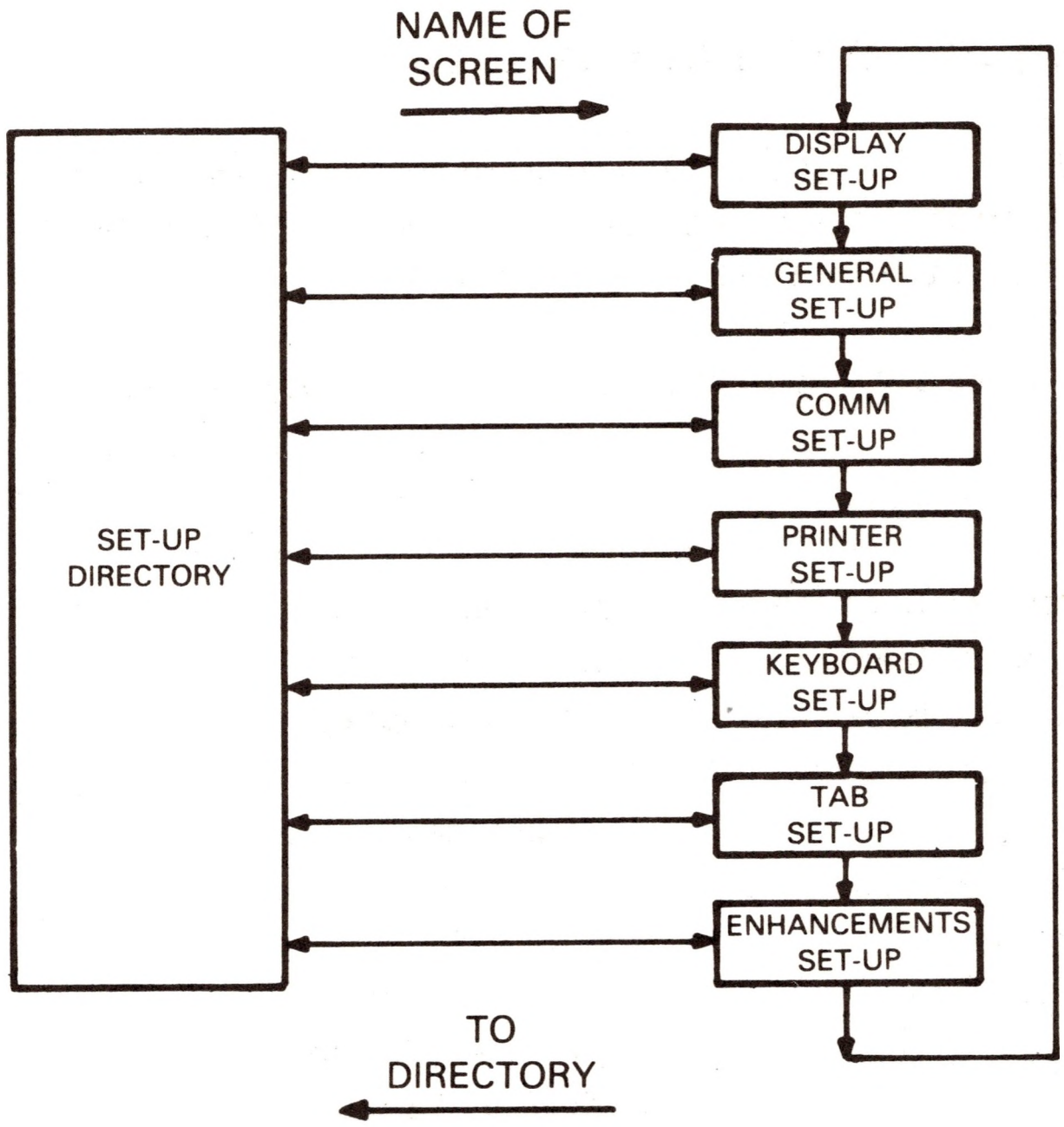


Figure 3–2. Set-Up Screen Sequence

Screen Descriptions

Sections 3.4 through 3.11 describe the set-up screens. Each section follows the same format. The screen is shown, with feature fields printed in blue and action fields printed in black. On most screens, the only action fields are "To Next Set-Up" and "To Directory," explained in the previous section.

The feature fields are described in table format, in the order that the fields appear on the screen. In the table, the feature name used in this manual to identify the feature is printed in blue. Following the feature name are the options for that feature as they are displayed on the screen. The option shown on the screen and noted in the tables by an asterisk (*) is the default setting, the one that will be in effect if "Default" is selected on the set-up directory screen (section 3.4).

Alphabetical List of Features

To aid you in finding a particular feature, Table 3–3 lists the features alphabetically, the screens on which they appear, and the sections in which they are discussed.

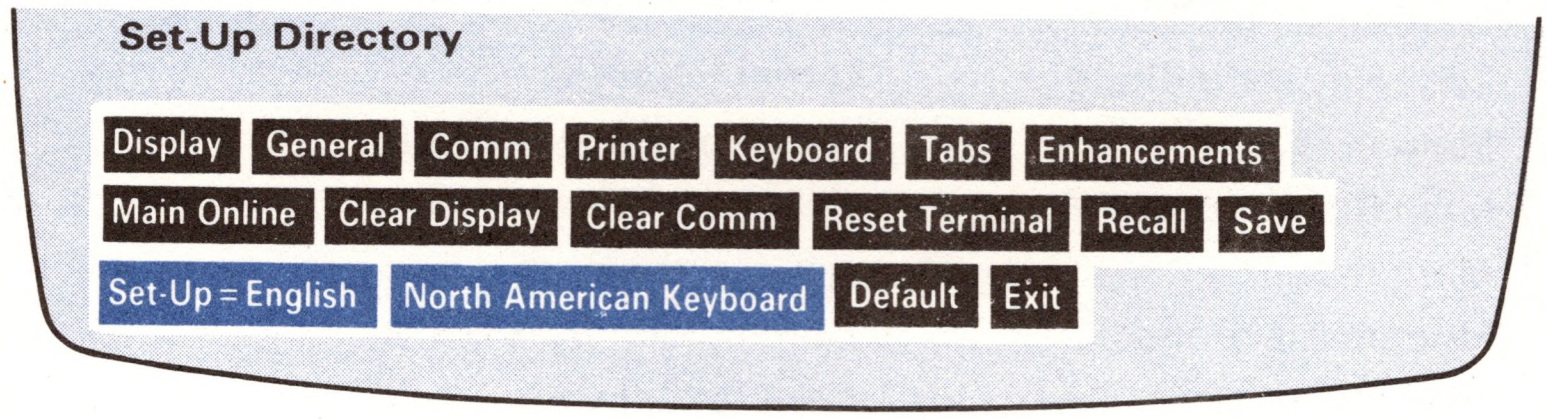
Table 3–3. Alphabetical List of Set-Up Features (Part 1 of 2)

Feature	Screen	Section
Answerback Concealed	Keyboard Set-Up	3.9
Answerback Message	Keyboard Set-Up	3.9
Auto-Answerback	Keyboard Set-Up	3.9
Autorepeat	Keyboard Set-Up	3.9
Autowrap	Display Set-Up	3.5
AUX Bit/Parity	Printer Set-Up	3.8
AUX Speed	Printer Set-Up	3.8
AUX Stop Bits	Printer Set-Up	3.8
Break Key	Keyboard Set-Up	3.9
Caps Lock	Keyboard Set-Up	3.9
Character Set	General Set-Up	3.6
Communications Mode	Set-Up Directory	3.4
CRT-Saver Delay	Display Set-up	3.5
Cursor Key Codes	General Set-Up	3.6
Cursor Type	Display Set-Up	3.5
Data Processing Symbols	Keyboard Set-Up	3.9
Display Control Codes	Display Set-Up	3.5
F-Key Shift	Enhancements Set-Up	3.11
Host Bit/Parity	Communications Set-Up	3.7
Host Receive Speed	Communications Set-Up	3.7
Host Stop Bits	Communications Set-Up	3.7
Host Transmit Speed	Communications Set-Up	3.7
Keyboard Type	Set-Up Directory	3.4
Keyclick	Keyboard Set-Up	3.9
Keypad Codes	General Set-Up	3.6
Limited Transmit	Communications Set-Up	3.7
Local Echo	Communications Set-Up	3.7
Lock Features	General Set-Up	3.6

Table 3–3. Alphabetical List of Set-Up Features (Part 2 of 2)

Feature	Screen	Section
Lock Key Definitions	General Set-Up	3.6
Main Port	Communications Set-Up	3.7
Main Received XOFF	Enhancements Set-Up	3.11
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User Key Definitions	General Set-Up	3.6
VT100 F-Keys	Enhancements Set-Up	3.11
Warning Bell	Keyboard Set-Up	3.9
XOFF	Communications Set-Up	3.7

3.4. Set-Up Directory Screen



Postion the cursor on any set-up screen name in the first line of the directory set-up screen and press ENTER to display the selected set-up screen. Position the cursor on any of the remaining action fields to cause the selected function to be performed. Usually, the message "Done" is displayed on the status line when the action is complete.

Action Fields

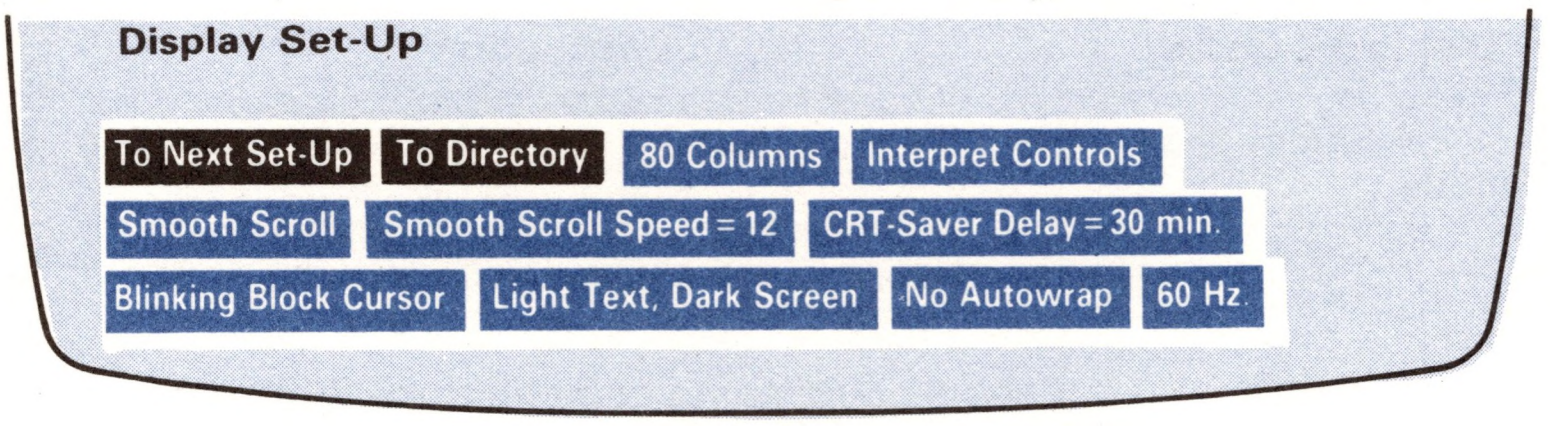
Function	Description
Clear Display	Erases original screen.
Clear Comm	Clears communications hang-up and aborts printing or host communications. Use this field only when instructed, as data may be lost.
Reset Terminal	Places terminal in pre-defined operating state for use with application programs (see sections 5.4 and 11.2 for details). Most features are not affected.
Recall	Replaces current settings for all set-up features with saved options. Erases original screen. See section 3.12 for more information.
Save	Saves (stores) current set-up options for all features. See section 3.12 for more information.
Default	Replaces all current settings with default options. Erases original screen. Puts cursor at home position. Disconnects modem. See section 3.12 for more information.
Exit	Exits set-up mode (same as pressing SET-UP key).

Feature Fields

Displayed Option	Description
Communications Mode	If a blinking "Printing" or "Main Send" message is displayed in this field, you can still press ENTER to change communications modes, but the change will not take effect until the operation is complete.
Main Online*	Enables terminal to communicate with host through MAIN connector (section 1.1). Character by character transmission.
Aux Online	Enables terminal to communicate with host through AUX connector (section 1.1). Character by character transmission.
Main + Aux Online	Enables terminal to communicate simultaneously with two hosts. Character by character transmission.
Local	Disables host communications. See section 2.1.
Edit Online	Same as "Main Online," but characters are not transmitted to host until you press ENTER, allowing you to edit data first (see section 4.3). Cannot be selected if terminal type feature (section 3.6) is set to "VT52 Mode."
Set-Up Language Set-Up = English* Menu = Français Deutsches Menü funz. = Italiano Establecer español	Selects language for set-up screens. New language version immediately replaces displayed version.
Keyboard Type North American* British Flemish Canadian (French) Danish Finnish German Dutch Italian Swiss (French) Swiss (German) Swedish Norwegian French/Belgian Spanish	Selects keyboard layout (Appendix A). In national mode (character set feature, general set-up screen, section 3.6), also selects corresponding 7-bit character set (Appendix B). To operate in national mode, this feature must be changed first.

*Default

3.5. Display Set-Up Screen



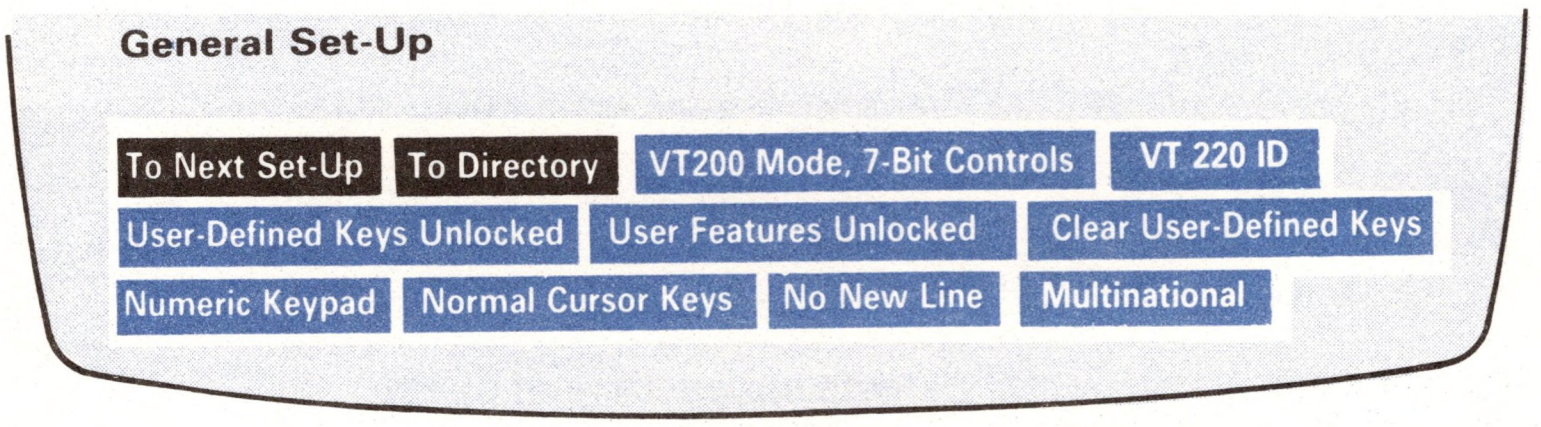
Displayed Option	Description
Screen Size 80 Columns* 132 Columns	Selects 80 or 132 column display. Screen size is changed immediately. Original screen is erased.
Display Control Codes Interpret Controls*	Implements control codes received from host or keyboard.
Display Controls	Displays but does not implement control codes received from host or keyboard. For example, pressing scan up key displays a special character instead of moving cursor. See section 6.4.
Scroll Rate Smooth Scroll*	Scrolls screen up at steady, easy-to-read rate (determined by smooth scroll speed feature). Useful for high host communications speeds.
Jump Scroll	Displays new lines as fast as they are received. Depending on host communications activity, lines on screen may appear to scroll up in jumps.
Smooth Scroll Speed = 1, 3, 6, 12*	Scrolls text at 1, 3, 6, or 12 rows per second when "Smooth Scroll" is selected. When the set-up screen is not displayed, pressing CTRL SCAN UP or CTRL SCAN DOWN has same effect (see section 2.2).

*Default

Displayed Option	Description
CRT-Saver Delay CRT-Saver Delay Off	Prevents screen from going blank.
CRT-Saver Delay = 5, 10, 15, 20, 25, 30,* 35, 40, 45, 50, 55, 60 min.	Blanks screen after specified number of minutes.
Cursor Type Blinking Block Cursor* Blinking Underline Cursor No Cursor Static Block Cursor Static Underline Cursor	Selects appearance of cursor.
Screen Background Light Text, Dark Screen* Dark Text, Light Screen	Selects normal (light characters on dark background) or reverse-video screen (dark characters on light background). Change takes effect immediately.
Autowrap No Autowrap*	When cursor is at right margin, displays next character in last position of current line, overwriting previous character.
Autowrap	When cursor is at right margin, displays next character in first position of next line.
Refresh Rate 60 Hz.* 50 Hz.	Selects the vertical refresh rate for CRT display. Setting should correspond to input power frequency.

*Default

3.6. General Set-Up Screen

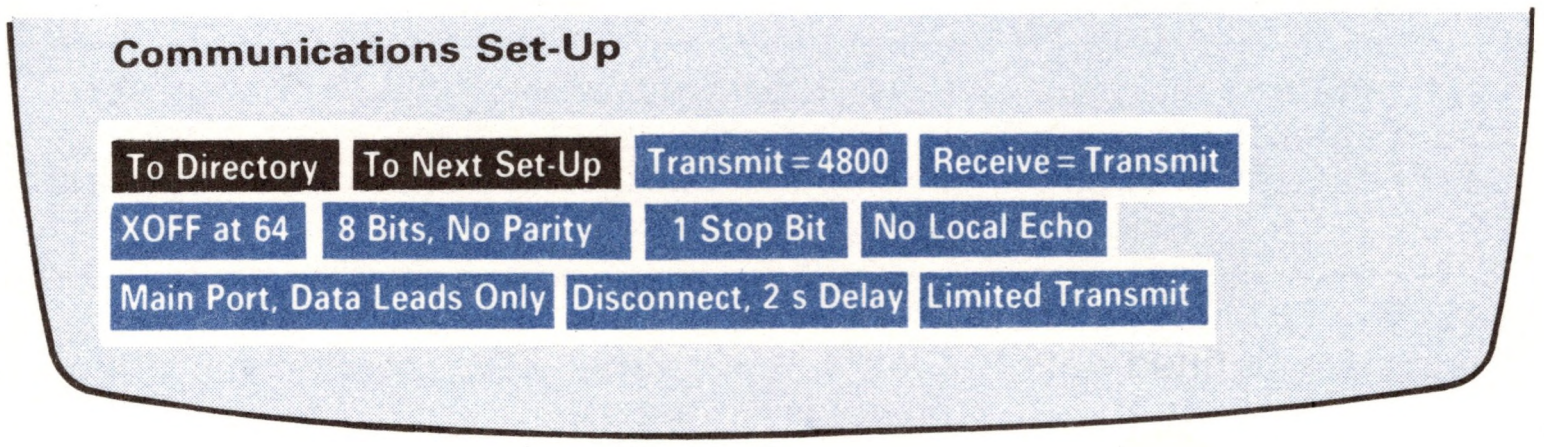


Displayed Option	Description
Terminal Type	Defines basic operating mode for terminal; see section 5.1.
VT200 Mode, 7-Bit Controls*	Allows terminal to operate with full capabilities, including 8-bit characters, using 7-bit control characters.
VT200 Mode, 8-Bit Controls	Allows terminal to operate with same capabilities as "VT200 Mode, 7-Bit Controls," but uses 8-bit control characters.
VT52 Mode	Selects operating mode appropriate for VT52 application programs. Cannot be selected if communications mode feature (section 3.4) is set to "Edit Online."
VT100 Mode	Selects operating mode appropriate for most VT100 applications.
Full VT100 Mode	Selects operating mode appropriate for systems requiring strict VT100 compatibility. See section 5.1 for more information on the differences between this option and "VT100 Mode."
Terminal ID VT220 ID VT100 ID VT101 ID VT102 ID	Displayed only if the terminal type feature is set to VT100 mode. Determines how the terminal identifies itself in response to a host device attributes request (see section 11.1).
Lock Key Definitions User-Defined Keys Unlocked*	Allows user-defined keys to be loaded by host (see section 8.5).
User-Defined Keys Locked	Prevents host from altering current user-defined keys; operator can still define keys (see section 4.4).

Displayed Option	Description
Lock Features User Features Unlocked* User Features Locked	When unlocked, allows host to change settings for autorepeat, smooth/jump scroll, screen background, tab stops, and keyboard lock (see section 9.1).
User Key Definitions Clear User-Defined Keys* Save User-Defined Keys	Clears user-defined keys (section 4.4) when power is turned off. Stores user-defined keys so they are not affected by power off.
Keypad Codes Numeric Keypad* Application Keypad	Numeric keypad transmits ASCII codes corresponding to the keycaps. Numeric keypad transmits escape sequences used by application programs (section 8.2).
Cursor Key Codes Normal Cursor Keys* Application Cursor Keys	Cursor scan keys transmit ANSI cursor control sequences (up, down, left, right). Cursor scan keys transmit application program control codes (section 8.2).
New Line No New Line* New Line	Affects the RETURN key and, if terminal is set for "Numeric Keypad," the ENTER key. RETURN key moves cursor to left margin of same line (generates only carriage return). Choose if you get double line feeds on data received from host. RETURN key moves cursor to left margin of next line (generates carriage return and line feed).
Character Set Multinational* National	Terminal uses the 8-bit multinational character set (described in section 6.2). This is the only option if the North American keyboard is selected. Choose for VT200 modes. Terminal uses the 7-bit national character set (described in Appendix B) that matches the keyboard type feature (set-up directory screen, 3.4).

*Default

3.7. Communications Set-Up Screen

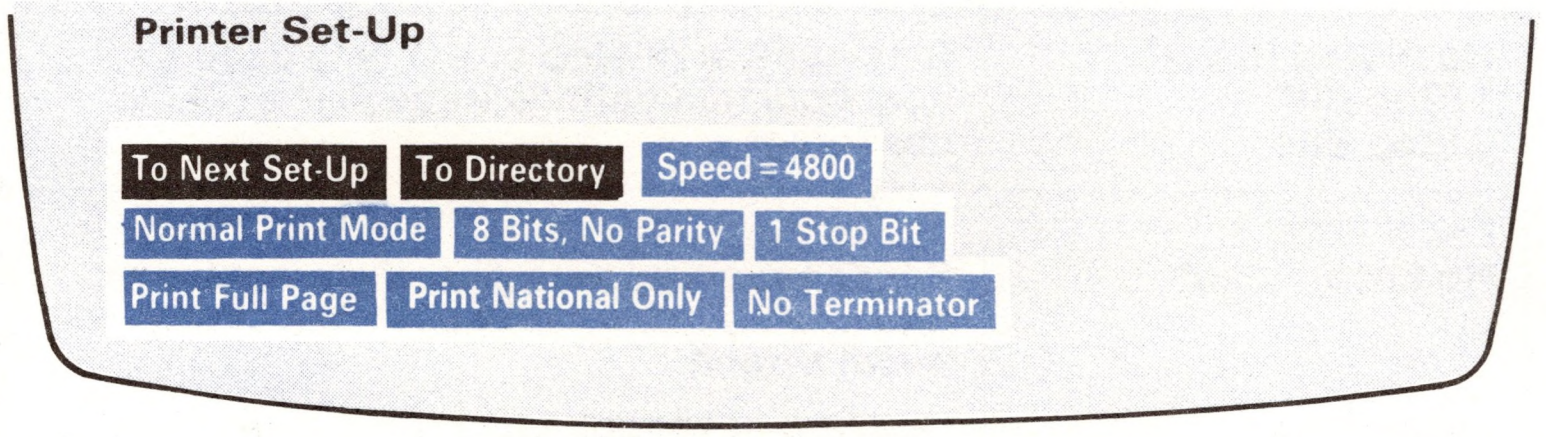


Displayed Option	Description
Host Transmit Speed Transmit = 75, 110, 150, 300, 600, 1200, 2400, 4800,* 9600, 19200	Rate at which terminal sends data to host through MAIN connector. Does not affect printer communications. Terminal transmit speed must match host system; can transmit at one speed and receive at another.
Host Receive Speed Receive = Transmit*	Terminal receives through MAIN connector at rate specified for host transmit speed.
Receive = 75, 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200	Terminal receives at specified rate (use these settings only if transmit and receive rates are different).
XOFF	See 13.1 for details on XON/XOFF control.
XOFF at 64*	Terminal sends XOFF when receive buffer contains 64 characters.
XOFF at 128	Terminal sends XOFF when receive buffer contains 128 characters.
No XOFF	Disables automatic XON/XOFF.
Host Bit/Parity 8 Bits, No* 8 Bits, Even 8 Bits, Odd 8 Bits, Even, No Check 8 Bits, Odd, No Check 7 Bits, No 7 Bits, Even 7 Bits, Odd 7 Bits, Even, No Check 7 Bits, Odd, No Check 7 Bits, Mark 7 Bits, Space	Selects data transfer format used for communications through the MAIN connector (see section 5.1). No effect on printer operation. Terminal must be set for any 8-bit format to transmit multinational characters and special symbols to host (see section 6.1).

Displayed Option	Description
Host Stop Bits 1 Stop Bit* 2 Stop Bits	Sets number of stop bits (1 or 2) used for host communications through the MAIN connector.
Local Echo No Local Echo*	Sends keyboard data directly to host, which may or may not send back (echo) data to terminal screen.
Local Echo	Displays keyboard data on the screen and also sends it to host. (This setting is required if host system does not echo data back.)
Main Port Main Port, Data Leads Only*	Terminal is connected directly to the host computer from the MAIN connector (port).
Main Port, Modem Control	Terminal is connected to host through an external modem connected to the MAIN connector (port). When this is selected, modem status is displayed on the indicator line (section 2.3).
Modem Disconnect Disconnect, 2 s Delay* Disconnect, 60 ms Delay	When "Main Port, Modem Control" is used, this feature determines time allowed after losing carrier detect signal before terminal disconnects from communications line (see section 13.2). 60 ms is for United Kingdom; other countries should use 2 s.
Limited Transmit Limited Transmit*	Restricts terminal transmit speed on MAIN connector to 150–180 characters per second regardless of baud rate, minimizing interrupt burden on host system.
Unlimited Transmit	Baud rate determines transmit speed.

*Default

3.8. Printer Set-Up Screen



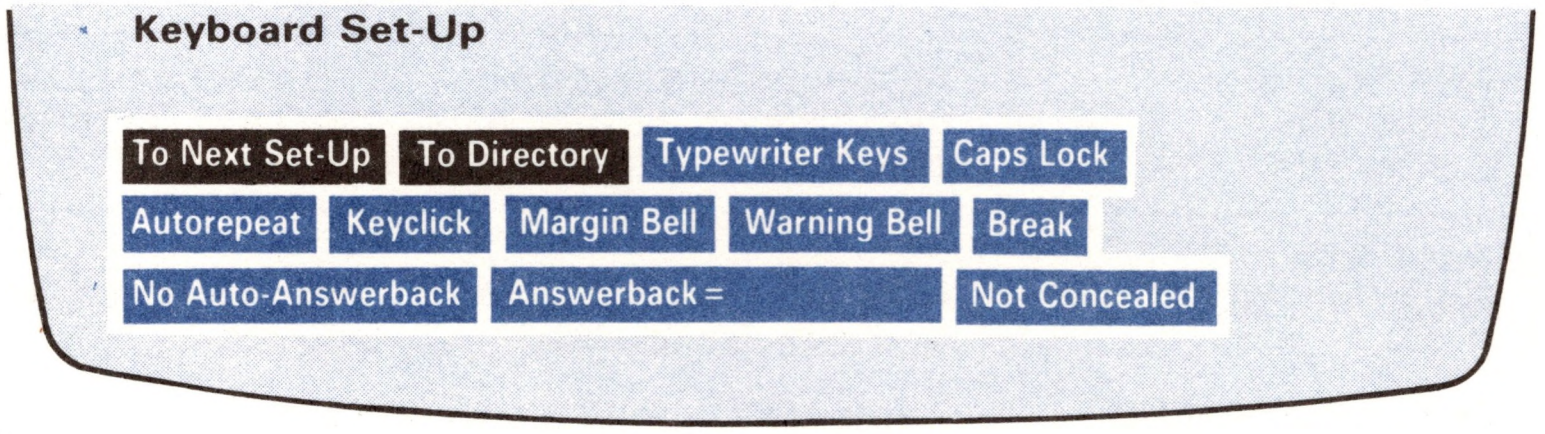
Displayed Option	Description
AUX Speed Speed = 75, 110, 150, 300, 600, 1200, 2400, 4800,* 9600, 19200	Selects rate at which terminal sends data to printer or second host through the AUX connector. This rate must match actual speed setting on printer.
Printer Mode	This feature can be changed from "Normal Print Mode" only if terminal is online and a printer is attached.
Normal Print Mode*	Allows printing to be initiated from keyboard.
Autoprint Mode	Prints current line of text when terminal receives a line feed, form feed, or vertical tab code from host.
Controller Mode	Host sends data directly to printer without displaying it on terminal screen.
AUX Bit/Parity 8 Bits, No* 8 Bits, Even 8 Bits, Odd 8 Bits, Even, No Check 8 Bits, Odd, No Check 7 Bits, No 7 Bits, Even 7 Bits, Odd 7 Bits, Even, No Check 7 Bits, Odd, No Check 7 Bits, Mark 7 Bits, Space	Selects data transfer format used for communications with printer or second host through AUX connector. Terminal setting must match printer setting.

*Default

Displayed Option	Description
AUX Stop Bits 1 Stop Bit* 2 Stop Bits	Sets number of stop bits (1 or 2) used for communications through AUX connector. Terminal setting must match printer setting.
Print Area Print Full Page*	Prints entire screen during a print page operation (see section 4.2).
Print Scroll Region	Prints only scrolling region during a print page operation.
Printed Characters	Selects whether 7-bit or 8-bit characters are sent to the printer. 7-bit characters can be selected even if 8-bit (multinational character set feature) characters are displayed, and vice versa.
Print National Only*	Sends 7-bit character set corresponding to the keyboard type feature, section 3.4. Choose this option for Sperry printers.
Print National and Line Drawing	Choose this option if printer supports a 7-bit character set and the 32-character special graphics character set.
Print Multinational	Choose this option if printer supports the 8-bit multinational character set and the special graphics character set.
Print Terminator No Terminator* Terminator = FF	Selects whether or not a terminator character (form feed, FF) is sent at end of a print page operation.

*Default

3.9. Keyboard Set-Up Screen

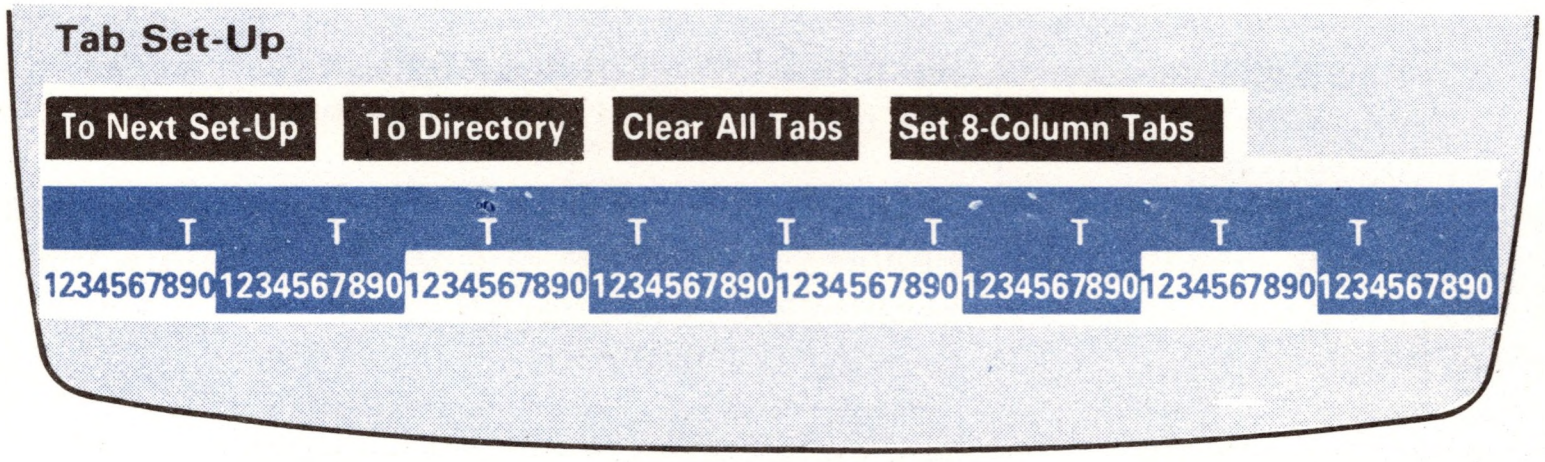


Displayed Option	Description
Data Processing Symbols Typewriter Keys*	Keyboard generates characters shown on left half of keycaps. For North American keyboard, choose this option.
Data Processing Keys	Keyboard generates characters shown on right half of keycaps; see Appendix B for explanation.
Caps Lock Caps Lock*	Pressing CAPS LOCK key affects only alphabetic keys, selecting uppercase characters.
Shift Lock	Pressing CAPS LOCK key affects alphabetic and numeric/symbol keys, so that they generate top (shift) symbols, instead of unshifted characters.
Autorepeat Autorepeat* No Autorepeat	Selects whether or not a keystroke is automatically repeated when you hold key down. Keys which do not autorepeat are listed in section 2.1.
Keyclick Keyclick* No Keyclick	Selects whether or not a click sounds when a key is pressed.
Margin Bell Margin Bell* No Margin Bell	Selects whether or not a bell sounds once when cursor is eight character positions from end of current line.

Displayed Option	Description
Warning Bell Warning Bell* No Warning Bell	Selects whether or not a bell sounds when you press an invalid key or press CTRL G.
Break Key Break* No Break	Enables or disables BREAK key function (see section 2.2). Does not affect terminal disconnect (SHIFT BREAK).
Auto-Answerback No Auto-Answerback* Auto-Answerback	Selects whether or not answerback message is sent automatically to host computer after connection through modem is complete. (see section 13.2).
Answerback Message Answerback =	Displays current answerback message, if any, or "<Concealed>" if message is not displayed because "Concealed" is selected for answerback concealed feature. To specify new message, press ENTER. Status line displays: Enter Answerback = Type new message (up to 30 characters). Press DELETE to erase a mistake. Then press ENTER. New message is displayed in answerback field unless message is concealed. To erase current answerback message without entering a new one, leave "Enter Answerback" field blank and press ENTER. To return to main part of the screen without changing the message, press any scan key.
Answerback Concealed Not Concealed* Concealed	Selects whether or not your answerback message is displayed on screen. Once "Concealed" has been selected, this feature cannot be changed to "Not Concealed" until a new answerback message has been entered.

*Default

3.10. Tab Set-Up Screen



The tab set-up screen lets you set the terminal tab stop settings. The bottom line has a ruler showing 80 or 132 column locations, depending on the screen size feature (display set-up screen, section 3.5). A capital T shows the location of each current tab stop.

Function	Description
Clear All Tabs	Pressing ENTER in this field immediately clears all tabs shown on the ruler.
Set 8-Column Tabs	Pressing ENTER in this field immediately sets tabs every eight columns, beginning in column 9.

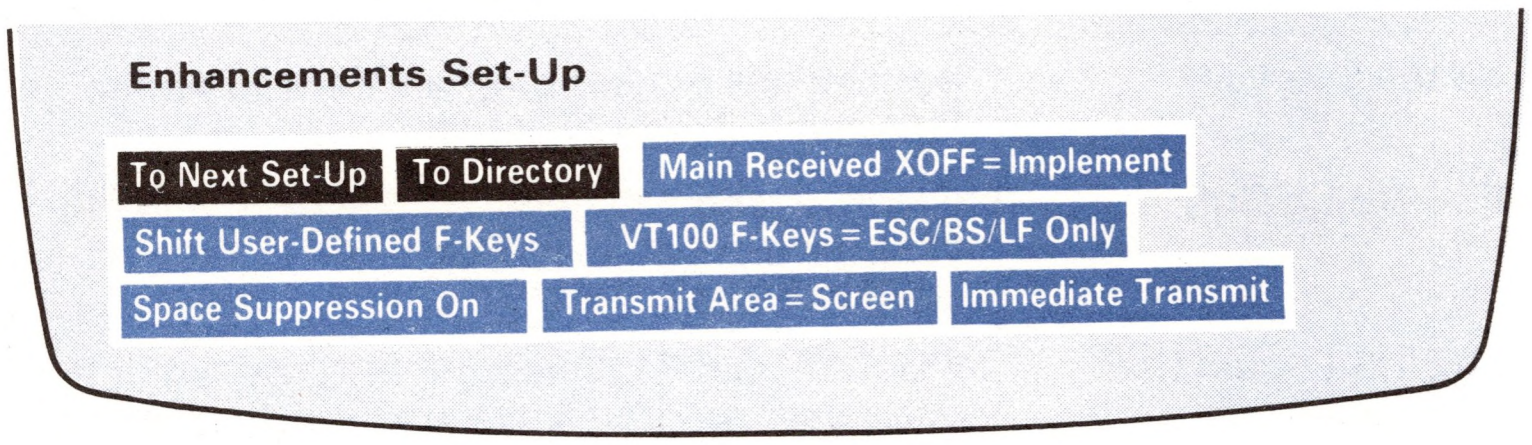
Setting a Tab

Move the cursor to the desired location, using the cursor scan keys. (When you move the cursor to the tab-ruler line, it becomes a blinking block.) Press ENTER. A capital T will be displayed at the cursor location.

Clearing a Tab

Move the cursor to the existing tab, using the TAB key or the scan keys. Press ENTER. The T will be erased.

3.11. Enhancements Set-Up Screen



Displayed Option	Description
Main Received XOFF =	Determines what happens when terminal receives an XOFF character from the host on the MAIN connector. This feature has no effect on terminal transmission of XON/XOFF. See section 13.1 for more detail.
Implement*	Terminal locks keyboard and stops transmission.
Ignore	Terminal ignores XOFF.
F-Key Shift	This feature is in effect only in VT200 modes and in VT100 modes when the VT100 F-keys feature is set to implement user program keys. It determines when SHIFT key must be used with program function keys (section 2.2).
Shift User-Defined F-Keys*	Requires that user-defined functions are selected by using SHIFT key.
No Shift User-Defined F-Keys	Allows user-defined functions to be selected by pressing the key without using SHIFT.

*Default

Enhancements Set-Up Screen

Displayed Option	Description
VT100 F-Keys =	Defines use of user program keys when the terminal is in VT100 modes.
ESC/BS/LF Only*	F11, F12, and F13 generate ESC, BS, and LF; other user program keys are not implemented.
ESC/BS/LF and User Program	F11, F12, and F13 generate ESC, BS, and LF; other user program keys are implemented as user program keys.
User Program Only	F6 through F20 are implemented as user program keys.
Space Suppression	Affects data transmission to host when terminal is in edit mode (see section 13.3).
Space Suppression On*	Suppresses trailing spaces at end of lines. Transmits carriage return and line feed codes at the end of each line.
Space Suppression Off	Transmits characters on display screen (no space suppression).
Transmit Area	Determines what data is transmitted to host when terminal is in edit mode (see section 4.3).
Transmit Area = Screen*	Transmits all data on the screen.
Transmit Area = Block	Transmits data from home position (or end of last block) through cursor position. Places a nondisplayed end-of-block marker after cursor position, allowing terminal to identify last character transmitted in previous block.
Transmit Execution	Determines what happens when ENTER is pressed to transmit data to host in edit mode (see section 13.3).
Immediate Transmit*	Transmits data as soon as ENTER is pressed.
Deferred Transmit	When ENTER is pressed, sends a request-to-transmit message to host. Data is not transmitted until host sends terminal a transmit command.

*Default

3.12. Saving Set-Up Changes

Set-up features can be changed and stored on either a temporary or a permanent basis. Features are stored temporarily when you exit set-up mode; the terminal then functions under the new setting. All temporary settings are replaced by the permanent settings if a recall operation is performed, the terminal is set to defaults, or terminal power is turned off.

The save operation must be performed at the terminal keyboard. The host can temporarily modify the settings of some SVT-1220 features (Chapter 9), but cannot perform a save operation.

> **NOTE:**
>
> If you are setting host or printer communications features, either as part of initial installation or because the "SRAM ERROR" message was displayed when you turned the power on, you should perform a permanent save.

To save set-up features permanently:

1. Display the set-up directory screen (section 3.4).

2. Move the cursor to "Save" and press ENTER.

   "Done" will be displayed on the status line when the settings have been stored.

3.13. Recalling Permanent Feature Settings

To return to the feature settings which have been stored permanently (saved), perform the recall operation as follows:

1. Display the set-up directory screen (section 3.4).

2. Move the cursor to "Recall" and press ENTER.

   "Done" will be displayed on the status line when the permanent settings have been restored.

NOTE:

When a recall operation is performed, the original screen is erased.

3.14. Returning to Default Settings

Defaulting replaces all current settings with the defaults identified in sections 3.4 through 3.11.

CAUTION:

The terminal may not be able to communicate with the host under the default settings.

To return all features to their default settings:

1. Display the set-up directory screen (section 3.4).

2. Move the cursor to "Default" and press ENTER.

   "Done" will be displayed on the status line. The defaults are now the current (temporary) settings for all features.

NOTE:

The original screen is erased.

3. To make the defaults the permanent settings for all features, perform a save operation (section 3.12).

Chapter 4. Special Operations

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Chapter 4. Special Operations

4.1. Composing Characters

The complete SVT-1220 displayable character set is shown in Table 2–1. In addition to data characters from several different languages, the character set includes special punctuation and word processing symbols. At any one time, only a subset of those characters (the specific characters corresponding to the keyboard type feature) is available through a single keystroke.

This section describes a multiple-keystroke procedure for entering characters that are not part of your keyboard character set (determined by the keyboard type feature, set-up directory screen, section 3.4). The procedures described in this section must be used with the North American keyboard when the terminal is in multinational mode (character set feature, general set-up screen, section 3.6). Appendix B describes the procedures that are available on the other language keyboards in national mode.

NOTE:

In multinational mode, to display a character that is not shown on the keyboard layout you are using, you must be in VT200 mode, either 7-bit or 8-bit (general set-up screen, section 3.6). To transmit the character to the host, the terminal must be set for one of the 8-bit options on the communications set-up screen (section 3.7).

Composing Characters

Compose Character Sequence

The 3–keystroke compose sequence begins when you press the COMPOSE CHARACTER key. The Compose indicator lights to show that the next two keystrokes (characters) are part of the sequence, and they are not displayed. When valid characters are entered, the compose indicator turns off and the character is displayed and/or sent to the host.

For easy reference, the characters which can be accessed through the compose characters procedure are grouped into three categories:

- Punctuation symbols (Table 4–1)
- Word processing symbols (Table 4–2)
- National alphabetic characters (Table 4–3)

The tables show the displayed character (the result of the compose sequence) and the pair of data characters required to create that character. For some characters, more than one pair of characters is allowed. Either of the pair of characters can be entered first, unless otherwise stated.

Compose Character Examples

To create { (left brace):

1. Press the COMPOSE CHARACTER key.
2. Type **(—** or **—)** (see Table 4–1)

To create ¼:

1. Press the COMPOSE CHARACTER key.
2. Type **1 4** (must be in this order. See Table 4–2)

To create **Ç**:

1. Press the COMPOSE CHARACTER key.
2. Type **C ,** (See Table 4–3).

If you enter an invalid character, the sequence is aborted and the bell sounds once. Pressing a function key aborts the compose sequence without sounding the bell. Pressing the COMPOSE CHARACTER key restarts the compose sequence and aborts the previous sequence.

Aborting a Compose Sequence

If you enter compose mode inadvertently, press the DELETE key to terminate the compose sequence.

Table 4–1. Compose Sequence for Punctuation Symbols

Resultant Character	Characters Required
\ (backslash)	// or /<
[(left bracket)	((
] (right bracket)	))
| (vertical line)	/^
{ (left brace)	(–
} (right brace)	)–
¡ (inverted !)	!!
¿ (inverted ?)	??
« (angle quotation mark left)	<<
» (angle quotation mark right)	>>

Composing Characters

Table 4–2. Compose Sequence For Word Processing Symbols

Resultant Character	Characters Required
# (number sign)	+ +
@ (commercial at)	**aa** or **AA**
¢ (cent sign)	**c/** or **C/** or **c|** or **C|**
£ (pound sign)	**l–** or **L–** or **l=** or **L=**
¥ (yen sign)	**y–** or **Y–** or **y=** or **Y=**
§ (section sign)	**so** or **SO** or **s!** or **S!** or **s0** or **S0**
¤ (currency sign)	**xo** or **XO** or **x0** or **X0**
© (copyright sign)	**co** or **CO** or **c0** or **C0**
a (feminine ordinal indicator)	**a** or **A**
o (masculine ordinal indicator)	**o** or **O**
° (degree sign)	**0^** or **sp *** or **sp o** †
± (plus/minus sign)	+ –
^{1} (superscript 1)	**1^**
^{2} (superscript 2)	**2^**
^{3} (superscript 3)	**3^**
µ (micro sign)	**/u** or **/U** (in this order)
¶ (paragraph sign)	**p!** or **P!**
· (middle dot)	**.^**
¼ (fraction one-quarter)	**1 4** (in this order)
½ (fraction one-half)	**1 2** (in this order)

†sp = space bar

The alphabetic characters in Table 4–3 (except those marked with an asterisk) are generated as uppercase or lowercase characters. For example, if you enter E', an uppercase É is displayed; if you enter e', a lowercase é is displayed.

Table 4–3. Compose Sequence for Multinational Alphabetic Characters

Resultant Character	Characters Required	Other Characters Possible With Sequence
À (A grave)	**'A** (single quote)	**È Ì Ò Ù**
Á (A acute)	**'A** (apostrophe)	**É Í Ó Ú**
Â (A circumflex)	**^A**	**Ê Î Ô Û**
Ã (A tilde)	**~A**	**Ñ Õ ***
Ä (A umlaut)	**A"** or **A··**	**Ë Ï Ö Ü Ÿ**
Å (A ring)	***A** or **°A** (degree sign)	
Ç (C cedilla)	**,C**	
ß (German small sharp s) *	**ss**	
Æ (a e ligature)	**A E** (in this order)	
Œ (o e ligature)	**O E** (in this order)	
Ø (o slash)*	**o/**	

* All characters except these have an uppercase and lowercase.

4.2. Printing

Section 1.1 explains how to connect a printer to the terminal. The printer set-up screen (section 3.8) must then be used to select characteristics for communications between the printer and terminal. Since the settings for all features except printer mode and print area are dependent on the characteristics of the printer, the terminal must be set to match the printer.

The printed characters feature allows 7-bit or 8-bit characters to be sent to the printer, regardless of whether the displayed character set is 7-bit or 8-bit (character set feature, general set-up screen, section 3.6).

Operator-Initiated Printing

You can perform two types of printing:

- The current line is printed when the cursor moves to the next line (autoprint mode).
- The screen is printed when you press the PRINT SCREEN key (normal print mode).

If the terminal is online, host commands may inhibit or alter printing.

Normal Print Mode

You can perform print operations with the PRINT SCREEN key only when the terminal is set to "Normal Print Mode" or "Auto-Print Mode" (print mode feature, printer set-up screen, section 3.8). The data that is printed depends on the print area feature option selected, either the full screen ("Print Full Page") or a subsection of the screen called the scrolling region ("Print Scroll Region").

Autoprint Mode

Autoprint mode can be selected either through the printer set-up screen or by pressing CTRL PRINT SCREEN. While the terminal is in autoprint mode, "Printer: Auto" is displayed on the status line (section 2.3). Autoprint mode is ended either by changing the printer mode feature or by pressing CTRL PRINT SCREEN again, which returns the terminal to normal print mode.

Autoprint mode prints the current display line when any of the following conditions occur:

- Autowrap during data entry
- RETURN key moves cursor to new line
- LF key moves cursor to new line
- Host sends line feed, form feed, or vertical tab code

The PRINT SCREEN key can still be used to print the full screen or the scrolling region, the same as in normal print mode.

Host-Controlled Printing

When the terminal is online and in printer controller mode, the host computer controls printer operation. "Printer: Controller" is displayed on the status line. Characters sent to the terminal go directly to the printer and are not displayed on the terminal screen. Local printing is not allowed in this mode, and the PRINT SCREEN key does not work. While the printer is busy, the message "Printing" is displayed in the communications mode field on the set-up directory screen (section 3.4).

Entering Printer Commands

When the terminal is in "Aux Online" operation (communications mode feature, set-up directory screen, section 3.4), you can enter commands on the keyboard which are sent directly to the printer, instead of to the screen. These commands are used to prepare certain printers for operation. Refer to the printer documentation to determine whether you can use this capability.

4.3. Transmitting Data

When the terminal is set for "Edit Online" operation (communications mode feature, set-up directory screen, section 3.4), no data is sent to the host until you press the ENTER key. This section explains how to edit and transmit data. Section 13.3 provides additional details on how the data is transmitted.

Editing Data

When the terminal is set for edit mode, the program function keys listed in Table 4–4 become editing keys. Any user definitions for these keys (section 4.4) are stored but unavailable while in edit mode.

If edit functions or screen scrolling move characters off the screen before they have been transmitted, those characters are lost and must be reentered.

Table 4–4. Editing Keys

Key	Name	Function
PF1	INSERT LINE	Inserts a blank line at the cursor position. Cursor moves to column 1 of the inserted line. Lines below the cursor position are shifted down the screen. Any data on the last line is lost.
PF2	DELETE LINE	Deletes the line containing the cursor. Data below the deleted line is moved up one row and the cursor moves to column 1 of the next line. A blank line is inserted at the bottom of the screen.
PF3	INSERT CHARACTER	Inserts a blank character at the cursor position; the cursor does not move. Data to the right of the cursor on the same line shifts one position to the right. Data shifted off the right margin of the line is lost.
PF4	DELETE CHARACTER	Deletes the character at the cursor position; the cursor does not move. Data to the right of the cursor on the same line shifts one position to the left. A blank is inserted at the end of the line.
F17	ERASE TO END OF LINE	Erases data from the cursor position to the end of the line. The line attribute established by the host is not affected.
F18	ERASE TO END OF DISPLAY	Erases data from the cursor position to the end of the display.
F19	CLEAR DISPLAY	Clears the entire display and repositions the cursor to home position. Clears all line and cursor attributes.
F20	CURSOR TO HOME	Repositions the cursor to the home position.

Transmitting Edited Data

No data is transmitted to the host until you press the ENTER key. When the ENTER key is pressed, the keyboard is locked, the Wait indicator is lit, and "Main Send" is displayed in the field used for the communications mode feature. To cancel the transmission and turn off the Wait indicator, select "Clear Comm" on the set-up directory screen (section 3.4).

The transmit area feature (enhancements set-up screen, section 3.11) determines how much of the screen is transmitted. If the feature is set for "Screen," the entire screen is transmitted, regardless of the cursor position on the screen.

If the feature is set for "Block," data from home position (or the end of the last block) through the cursor position is transmitted. A nondisplayed end-of-block marker is placed after the cursor position, which allows the terminal to identify the last character transmitted in the previous block.

4.4. Defining Function Keys

Program function keys F6 through F20 are normally defined (assigned functions) by the host. However, the SVT–1220 provides a way for you to define these keys to do such things as:

- Transmit a special password or instruction to the host
- Display a certain message
- Enter a return and three tab characters to move you to the correct line and column when typing a table

Defining a function key is a way to save keystrokes, since you type the key sequence only once. Thereafter, you just press the function key whenever you need the sequence.

The terminal stores the key definitions in a special memory which holds a maximum of 256 keystrokes. The number of keystrokes in a particular key sequence is limited only by the amount of unused space.

The host can also define the program function keys, using the same 256–character memory (see section 8.5). To prevent the host from overwriting the key definitions, select "User-Defined Keys Locked" for the lock key definitions feature (general set-up screen, section 3.6).

Define Procedure

1. Set the terminal to a VT200 or VT100 mode on the general set-up screen. If you are in a VT100 mode, select "VT100 F-Keys = User Program Only" or "VT100 F-Keys = ESC/BS/LF and User Program" on the enhancements set-up screen (section 3.11).

2. If a set-up screen is not displayed, press SET-UP. (F-key definition can be done from any set-up screen.)

3. Press CTRL and the function key you want to define.

   The following display will replace the status line:

   F-XX | xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx | ####

   F-XX = the number of the key being defined

   #### = the amount of unused space for keystrokes

   xxxxx = the field in which the keystrokes to be generated by the function key are entered. If that key has a previous definition, it is displayed.

4. Type the key sequence to be generated by the function key.

   The diamond character (◆) identifies the end of the key sequence. If the key has no sequence, the diamond is displayed at the left edge of the area.

   Since the terminal is always in insert operation when you type in this area, the space bar is not destructive and characters cannot be corrected by typing over them. The scan right and scan left keys move the cursor right or left. The DELETE key deletes the character to the left of the cursor. The SHIFT DELETE key deletes the character under the cursor. The CTRL DELETE key erases the entire key sequence.

   The TAB and RETURN keys can be part of the key sequence; special characters are displayed to represent these keys. All other keys are invalid, and the terminal beeps once if you press an invalid key.

   To program control codes into the function key sequence, use the method described in section 8.3.

As you enter characters, the diamond moves right across the field, and the amount of unused space changes. When the diamond reaches the right margin of the field, you can still enter more keystrokes in the sequence. When you enter the next character, all characters in the field shift left one position, and blinking 《 characters are displayed on the left side of the field to show that the sequence contains additional characters which are not displayed.

To redisplay these characters, hold down the scan left key until the cursor reaches the left margin. Continue pressing the scan left key, and the data will be scrolled to the right, displaying the characters at the beginning of the sequence. Blinking 》 characters will now be displayed at the right side of the field to indicate that nondisplayed characters are on the right.

If the keystroke memory is full, the terminal beeps when you attempt to enter additional keystrokes.

5. When the key sequence is complete, press ENTER to store the key definition sequence.

   The original status line will be redisplayed.

Selecting Shift Level

The F-key shift feature (enhancements set-up screen, section 3.11) determines whether user-defined functions are generated by the shifted or unshifted level of the key. Select "No Shift User-Defined F-Keys" for easy access to user key definitions.

Saving Key Definitions

The key definitions are cleared when the terminal is turned off or set to default values, unless "Save User-Defined Keys" is selected on the general set-up screen (section 3.6).

Part II.

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Chapter 6. Character and Control Codes

Chapter 7. Character Set Selection

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Chapter 5. Operating Modes

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Chapter 5. Operating Modes

The SVT-1220 supports two categories of modes: operating modes and terminal modes. Operating modes determine the basic set of functions that the SVT-1220 provides and the way that the terminal and host communicate information. Terminal modes determine the settings for specific terminal characteristics; some terminal modes correspond to operator-selectable features described in Chapter 3.

This chapter provides an overview of the operating modes; terminal modes are described in Chapter 9. The explanation of the modes refers to character sets and control codes that are explained in Chapter 6.

5.1. Mode Descriptions

The two major operating modes are terminal type and communications mode.

Terminal Type Mode

Terminal type mode determines which of the following terminals the SVT-1220 emulates:

VT200, 8-bit controls
VT200, 7-bit controls
VT100
Full VT100
VT52

Mode Descriptions

The operator can select any of these modes through the terminal type feature (general set-up screen, section 3.6). In addition, the host has commands which place the terminal in some of the modes, but not all (see section 5.3).

VT200 Mode, 8-Bit Controls

VT200 mode, 8-bit controls, provides the full range of SVT-1220 capabilities in an 8-bit communications environment. This mode supports the multinational character set.

The VT100 and VT200 modes execute standard American National Standards Institute (ANSI) functions; consequently, they generally support the same set of commands. Areas of difference are noted throughout the manual, usually by the terms "7-bit environment" (VT100 modes) or "8-bit environment" (VT200 modes). Section 5.2 provides additional information on 7-bit and 8-bit environments.

VT200 Mode, 7-Bit Controls

VT200 mode, 7-bit controls, provides the same capabilities as VT200 mode, 8-bit controls. The major difference is that 7-bit control commands are sent to the host.

VT100 Mode

VT100 mode provides a high degree of compatibility with the VT102 and VT100 terminals. VT100 mode uses a 7-bit environment.

Full VT100 Mode

Full VT100 mode is an enhancement added by Sperry. It provides strict compatibility with the VT100 terminal, allowing the SVT-1220 to be used in VT100 applications without program changes. Full VT100 mode adds the following features to VT100 mode:

- The transmit speed is limited to 60 characters per second.
- The report terminal parameters sequence (section 11.1) is supported.
- The device attributes request sequence evokes a unique full VT100 mode response (see section 11.1).

VT52 Mode

VT52 mode makes the SVT-1220 compatible with software written for a VT52 terminal. In VT52 mode, the terminal executes a unique set of escape sequences (described in Appendix E) instead of ANSI standard commands. Chapter 8 defines unique VT52 key codes.

All ASCII control characters are allowed, although some are ignored. No VT200 mode supplemental control characters or ANSI functions are allowed. VT52 mode is designed for a 7-bit communications environment.

Mode Descriptions

Communications Mode

The communications mode determines whether the terminal is in communication with the host, and if so, through which connector. The five communications mode choices are of two major types: local operation with no host communications (see section 2.1) and online operation. Any of these options can be selected for any terminal type, except that VT52 mode and edit mode are mutually exclusive.

The communications mode is primarily set by the operator through the communications mode feature on the set-up directory screen. However, if the terminal is not set for local or VT52 mode operation, the host can select edit mode data transmission (described in section 13.3) through the edit mode sequence (section 9.5). This option should be used with care, as it will disrupt communications if the terminal is connected to two hosts.

The online options specify which connector (section 1.1) is used for host communications. The choices are:

- **Main Online** — Terminal communicates with host through MAIN connector.
- **Aux Online** — Terminal communicates with host through AUX connector.
- **Main & Aux Online** — Terminal communicates simultaneously with two hosts. This capability is a Sperry enhancement.
- **Edit Online** — Terminal communicates through MAIN connector, but operator must transmit data.

For the first three options, data is transmitted to the host as it is entered (character-by-character transmission). The edit online option causes data to be saved in the terminal and sent in a block when the operator presses the ENTER key. This method, a Sperry enhancement, allows the operator to edit (correct) a screen of data before it is sent to the host.

5.2. 8-Bit Environments

To use the 8-bit multinational character set, programs must be 8-bit compatible, and the terminal must be operating in a VT200 mode. VT52 and VT100 modes are 7-bit environments. This section describes operation in VT200 modes.

Received Codes

Character codes received by the terminal should be in 8-bit format (defined in Chapter 6). Applications can use the C0 and C1 control codes as well as the 7-bit C1 code equivalents.

When a program sends GL or GR codes, the terminal interprets them according to the current character set mapping. The default mapping for VT200 mode after power on or reset is the multinational character set.

Transmitted Codes

Codes transmitted by the terminal come either from the keyboard or are in response to host commands. In VT200 mode, the terminal transmits GL and GR codes to the application exactly as they are generated, whether or not the application is designed for 8-bit operation. However, in VT200 7-bit mode, C1 controls are transmitted as escape sequences, and 8-bit data characters cannot be generated.

Most function keys generate multibyte control codes which start with CSI or SS3, which are 8-bit characters. If the host cannot handle 8-bit codes, the terminal can convert C1 codes to their equivalent 7-bit code extensions before they are transmitted. The select 7-bit C1 control transmission command (section 5.3) is used for this purpose.

5.3. Operating Mode Commands

The command sequences used by the host to change operating modes are defined in this section. General information about control characters and command sequences is contained in Chapter 6.

Select Terminal Type

When the terminal is in any operating mode except VT52 mode, you can select the type of terminal by using the following sequences:

ESC [6 1 " p	Set terminal for VT100 mode.
ESC [6 3 " p	Set terminal for full VT100 mode.
ESC [6 2 " p ESC [6 2 ; 0 " p ESC [6 2 ; 2 " p	Set terminal for VT200 mode, 8-bit controls.
ESC [6 2 ; 1 " p	Set terminal for VT200 mode, 7-bit controls.

These sequences perform a soft reset, putting the terminal in a known state (defined in section 11.2), in addition to setting the operating mode and C1 control state.

The ANSI/VT52 mode command (section 9.4) is used to enter VT52 mode. This command is ignored if the terminal is in edit mode (section 9.5). To exit VT52 mode, the ESC < command must be used. This command places the terminal in full VT100 mode. If a different mode is desired, one of the escape sequences must be used.

Select C1 Control

In VT200 mode, the select C1 control commands determine whether 8-bit C1 control codes or their 7-bit equivalents are sent to the host. The codes sent in either mode are defined in section 6.3. The terminal accepts 7-bit or 8-bit forms for C1 controls in both VT200 modes.

Select 7-Bit C1 Control Transmission

ESC sp F

This sequence causes all C1 codes sent to the host to be converted to their equivalent 7-bit extensions (identified in Table 6–6). This sequence is ignored when the terminal is in VT100 or VT52 mode.

Select 8-Bit C1 Control Transmission

ESC sp G

This sequence causes the terminal to send C1 codes to the host without converting them.

5.4. Resetting the Terminal

A number of terminal functions are available to the host and to the operator to reset modes to predefined states. Some host functions have operator-accessible equivalents, as shown in Table 5–1.

Table 5–1. Summary of Reset Functions

Host	Operator
Reset to initial state, section 11.2	Power on Recall, section 3.4
Soft terminal reset, section 11.2	Reset Terminal, section 3.4
	Default, section 3.4
Set mode and reset mode, section 9.2	

NOTE:

The terms "power on" and "reset" refer to the conditions caused by turning terminal power off and then on, performing a "Recall" function on the set-up directory screen, or sending the terminal a "reset to initial state" command. Section 11.2 defines the conditions.

Chapter 6. Character and Control Codes

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Chapter 6. Character and Control Codes

This chapter describes the character encoding used on the SVT-1220. It also describes the SVT-1220 character sets and provides an overview of the control functions.

The SVT-1220 uses an 8-bit character encoding scheme and a 7-bit code extension technique that are compatible with the Digital VT220 and with American National Standards Institute (ANSI) and International Organization for Standardization (ISO) standards.

6.1. Character Coding

The SVT-1220 processes character codes based on the character code table matrix shown in Table 6–1. Each row represents a possible value of the four least significant bits of an 8-bit code (Figure 6–1). Each column represents a possible value of the four most significant bits. Any character can be identified by its column and row position in the chart; the column number is always first. For example, the control code CR (carriage return) is in position column 0/ row 13.

7-bit environments support only the 128 code values in the left half of the character matrix (columns 0 through 7). 7-bit codes are 7-bit compatible; their 8th bit is not set and can be ignored or assumed to be 0. These codes can be used in either a 7-bit or an 8-bit environment.

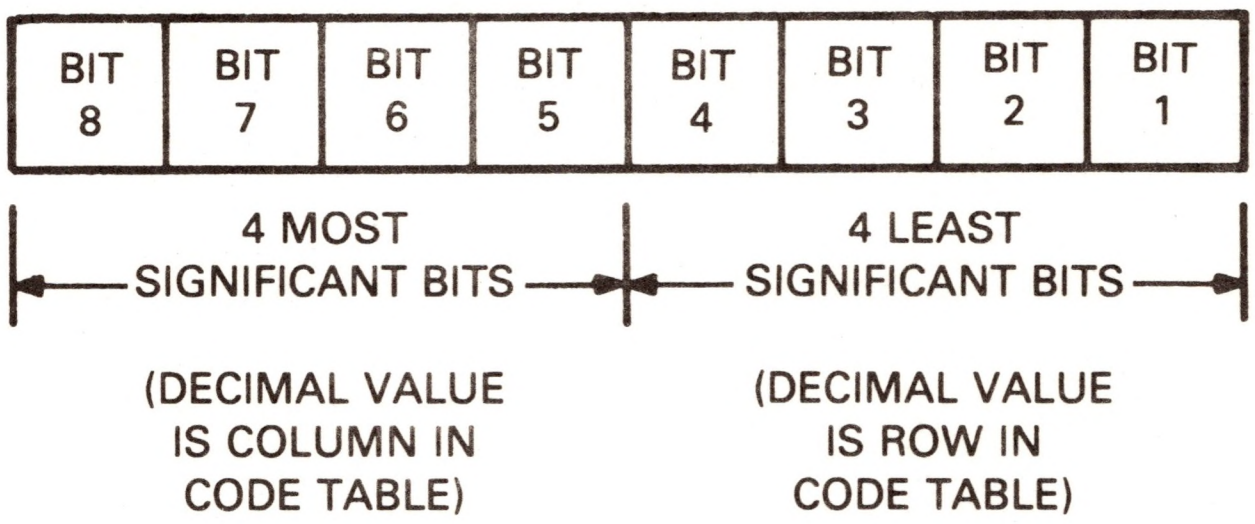


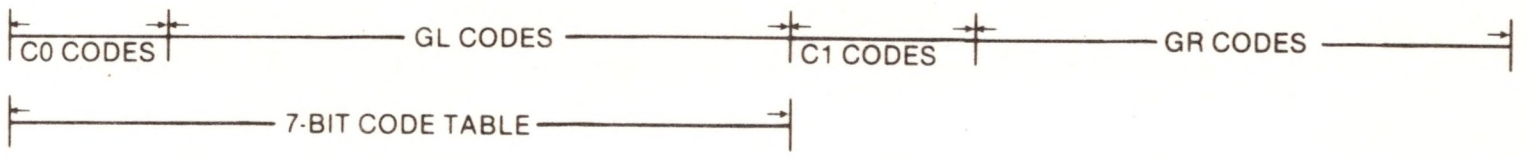
Figure 6–1. Bit Positions

Character Coding

The codes on the right half of the table (columns 8 through 15) have their 8th bit set. These codes can be used only in VT200 8-bit communications mode.

Table 6–1. 8-Bit Control Codes

	COL	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
		0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
		0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
ROW	BITS	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
0	0000	NUL	DLE	SP							DCS	///					
1	0001	SOH	DC1 (XON)								PU1						
2	0010	STX	DC2														
3	0011	ETX	DC3 (XOFF)								STS						
4	0100	EOT	DC4							IND	CCH						
5	0101	ENQ	NAK							NEL	MW						
6	0110	ACK	SYN							SSA	SPA						
7	0111	BEL	ETB							ESA	EPA						
8	1000	BS	CAN							HTS							
9	1001	HT	EM							HTJ							
10	1010	LF	SUB							VTS							
11	1011	VT	ESC							PLD	CSI						
12	1100	FF	FS							PLU	ST						
13	1101	CR	GS							RI	OSC						
14	1110	SO	RS							SS2	PM						
15	1111	SI	US						DEL	SS3	APC						



6.2. Character Types

The SVT-1220 recognizes two types of characters: control characters and data characters. Control characters are nondisplayed, single-byte codes that perform specific functions in data communications and text processing. Data characters are characters which can be displayed.

The character matrix has positions for two sets of control characters (C0, control zero, and C1, control one) and two sets of data characters (GL, graphics left, and GR, graphics right); see Figure 6–2.

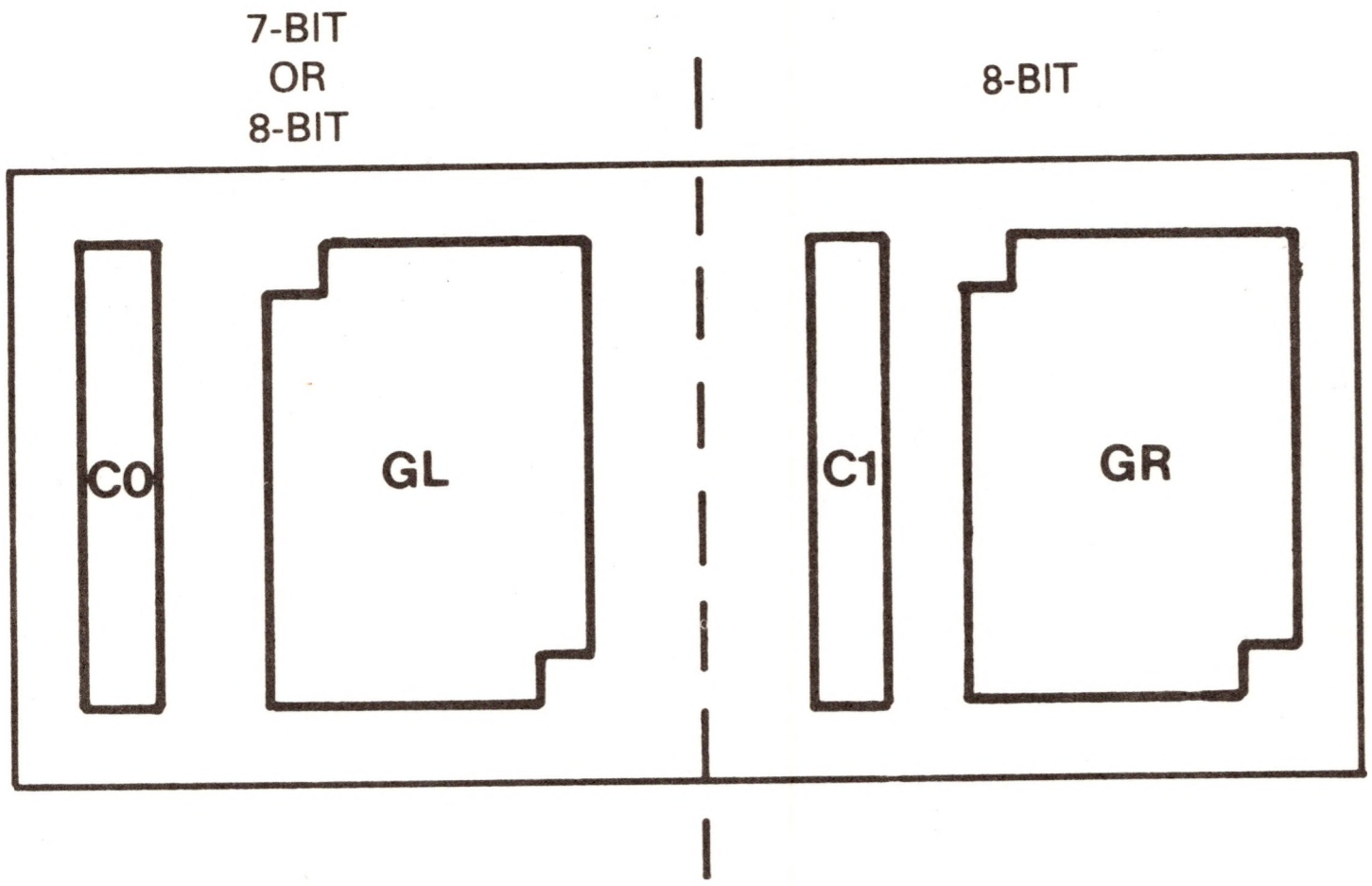


Figure 6–2. Code Table Memory

Control Codes

The basic functions of the C0 and C1 control codes are defined by ANSI and cannot be redefined by the user. The C0 codes are the ASCII 7-bit control characters, which can be used in either 7-bit or 8-bit environments. The C1 codes are 8-bit control characters which provide additional functions. Although C1 codes can be used only in an 8-bit environment, they have 7-bit equivalents (section 6.3).

The SP character (space, hex 20) can be either a data character or a control character. DEL (hex 7F) is always a control character.

NOTE:

Some control codes shown in Table 6–1 are not implemented and are ignored if received by the terminal. Subsequent chapters identify the codes which are implemented.

Data Characters

The positions in GL and GR are reserved for data characters. When power is turned on or the terminal is reset, GL and GR are loaded with the multinational character set described in section 6.2. Different character sets can subsequently be loaded into GL and/or GR through the procedures defined in section 7.1.

GL and GR each have room for 94 characters. GL is positions 2/1 through 7/14; GR is positions 10/1 through 15/14 (see Table 6–1). By ANSI standards, positions 10/0 and 15/15 are not used. GL codes can be used in either a 7-bit or 8-bit environment; GR codes can be used only in an 8-bit environment.

6.3. Character Sets

The following character sets are permanently stored in terminal memory:

- Multinational character set, which contains:
  - ASCII character set
  - Supplemental character set
- Twelve national character sets
- Special graphics character set

In addition, a user-defined character set can be created by host programmers and downline-loaded into the terminal (see section 7.2).

A character set cannot be used until it has been mapped into the GL and/or GR areas to make it available for use. The commands for mapping data character sets into GL or GR are described in section 7.1.

The character set feature (general set-up screen, section 3.6) determines whether the terminal default character set is the multinational character set (multinational mode) or one of the national character sets (national mode). The host can also change the character set mode (see section 9.4).

The character set feature/mode overrides the terminal type feature/mode in determining whether the multinational character set or a national character set is available. Errors may occur if national mode and VT200 8-bit operation are both selected, or if multinational mode is selected when the terminal is not in VT200 mode.

Multinational Character Set

When the terminal is turned on or reset and is in multinational mode, the multinational character set (Table 6–2) is automatically mapped into columns 0 through 15 of the character matrix. Table 6–2 shows the octal, decimal, and hexadecimal code values for 256 characters.

Character Sets

Table 6–2A. SVT-1220 Multinational Character Set, ASCII Subset

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	**NUL**	20 16 10	**DLE**	40 32 20	**SP**	60 48 30	**0**	100 64 40	@	120 80 50	**P**	140 96 60	`	160 112 70	**p**
1	1 1 1	**SOH**	21 17 11	**DC1** (XON)	41 33 21	!	61 49 31	**1**	101 65 41	**A**	121 81 51	**Q**	141 97 61	**a**	161 113 71	**q**
2	2 2 2	**STX**	22 18 12	**DC2**	42 34 22	"	62 50 32	**2**	102 66 42	**B**	122 82 52	**R**	142 98 62	**b**	162 114 72	**r**
3	3 3 3	**ETX**	23 19 13	**DC3** (XOFF)	43 35 23	#	63 51 33	**3**	103 67 43	**C**	123 83 53	**S**	143 99 63	**c**	163 115 73	**s**
4	4 4 4	**EOT**	24 20 14	**DC4**	44 36 24	$	64 52 34	**4**	104 68 44	**D**	124 84 54	**T**	144 100 64	**d**	164 116 74	**t**
5	5 5 5	**ENQ**	25 21 15	**NAK**	45 37 25	%	65 53 35	**5**	105 69 45	**E**	125 85 55	**U**	145 101 65	**e**	165 117 75	**u**
6	6 6 6	**ACK**	26 22 16	**SYN**	46 38 26	&	66 54 36	**6**	106 70 46	**F**	126 86 56	**V**	146 102 66	**f**	166 118 76	**v**
7	7 7 7	**BEL**	27 23 17	**ETB**	47 39 27	'	67 55 37	**7**	107 71 47	**G**	127 87 57	**W**	147 103 67	**g**	167 119 77	**w**
8	10 8 8	**BS**	30 24 18	**CAN**	50 40 28	(	70 56 38	**8**	110 72 48	**H**	130 88 58	**X**	150 104 68	**h**	170 120 78	**x**
9	11 9 9	**HT**	31 25 19	**EM**	51 41 29	)	71 57 39	**9**	111 73 49	**I**	131 89 59	**Y**	151 105 69	**i**	171 121 79	**y**
10	12 10 A	**LF**	32 26 1A	**SUB**	52 42 2A	*	72 58 3A	:	112 74 4A	**J**	132 90 5A	**Z**	152 106 6A	**j**	172 122 7A	**z**
11	13 11 B	**VT**	33 27 1B	**ESC**	53 43 2B	+	73 59 3B	;	113 75 4B	**K**	133 91 5B	**[**	153 107 6B	**k**	173 123 7B	{
12	14 12 C	**FF**	34 28 1C	**FS**	54 44 2C	,	74 60 3C	<	114 76 4C	**L**	134 92 5C	\	154 108 6C	**l**	174 124 7C	|
13	15 13 D	**CR**	35 29 1D	**GS**	55 45 2D	–	75 61 3D	=	115 77 4D	**M**	135 93 5D	**]**	155 109 6D	**m**	175 125 7D	}
14	16 14 E	**SO**	36 30 1E	**RS**	56 46 2E	.	76 62 3E	>	116 78 4E	**N**	136 94 5E	^	156 110 6E	**n**	176 126 7E	~
15	17 15 F	**SI**	37 31 1F	**US**	57 47 2F	/	77 63 3F	?	117 79 4F	**O**	137 95 5F	_	157 111 6F	**o**	177 127 7F	**DEL**

C0 CODES — GL CODES (ASCII CHARACTERS)

KEY:

OCTAL	33	**ESC**	CHARACTER
DECIMAL	27		
HEX	1B		

Table 6–2B. SVT-1220 Multinational Character Set, Supplemental Character Subset

COL / ROW	8	9	10	11	12	13	14	15
0	200 128 80	220 144 90 **DCS**	240 160 A0	260 176 B0 °	300 192 C0 **À**	320 208 D0	340 224 E0 **à**	360 240 F0
1	201 129 81	221 145 91 **PU1**	241 161 A1 ¡	261 177 B1 ±	301 193 C1 **Á**	321 209 D1 **Ñ**	341 225 E1 **á**	361 241 F1 **ñ**
2	202 130 82	222 146 92 **PU2**	242 162 A2 ¢	262 178 B2 ²	302 194 C2 **Â**	322 210 D2 **Ò**	342 226 E2 **â**	362 242 F2 **ò**
3	203 131 83	223 147 93 **STS**	243 163 A3 £	263 179 B3 ³	303 195 C3 **Ã**	323 211 D3 **Ó**	343 227 E3 **ã**	363 243 F3 **ó**
4	204 132 84	224 148 94 **CCH**	244 164 A4	264 180 B4	304 196 C4 **Ä**	324 212 D4 **Ô**	344 228 E4 **ä**	364 244 F4 **ô**
5	205 133 85 **NEL**	225 149 95 **MW**	245 165 A5 ¥	265 181 B5 µ	305 197 C5 **Å**	325 213 D5 **Õ**	345 229 E5 **å**	365 245 F5 **õ**
6	206 134 86 **SSA**	226 150 96 **SPA**	246 166 A6	266 182 B6 ¶	306 198 C6 **Æ**	326 214 D6 **Ö**	346 230 E6 **æ**	366 246 F6 **ö**
7	207 135 87 **ESA**	227 151 97 **EPA**	247 167 A7 §	267 183 B7 ·	307 199 C7 **Ç**	327 215 D7 **Œ**	347 231 E7 **ç**	367 247 F7 **œ**
8	210 136 88 **HTS**	230 152 98	250 168 A8 ¤	270 184 B8	310 200 C8 **È**	330 216 D8 **Ø**	350 232 E8 **è**	370 248 F8 **ø**
9	211 137 89 **HTJ**	231 153 99	251 169 A9 ©	271 185 B9 ¹	311 201 C9 **É**	331 217 D9 **Ù**	351 233 E9 **é**	371 249 F9 **ù**
10	212 138 8A **VTS**	232 154 9A	252 170 AA a	272 186 BA º	312 202 CA **Ê**	332 218 DA **Ú**	352 234 EA **ê**	372 250 FA **ú**
11	213 139 8B **PLD**	233 155 9B **CSI**	253 171 AB «	273 187 BB »	313 203 CB **Ë**	333 219 DB **Û**	353 235 EB **ë**	373 251 FB **û**
12	214 140 8C **PLU**	234 156 9C **ST**	254 172 AC	274 188 BC ¼	314 204 CC **Ì**	334 220 DC **Ü**	354 236 EC **ì**	374 252 FC **ü**
13	215 141 8D **RI**	235 157 9D **OSC**	255 173 AD	275 189 BD ½	315 205 CD **Í**	335 221 DD **Ÿ**	355 237 ED **í**	375 253 FD **ÿ**
14	216 142 8E **SS2**	236 158 9E **PM**	256 174 AE	276 190 BE	316 206 CE **Î**	336 222 DE	356 238 EE **î**	376 254 FE
15	217 143 8F **SS3**	237 159 9F **APC**	257 175 AF	277 191 BF ¿	317 207 CF **Ï**	337 223 DF **ß**	357 239 EF **ï**	377 255 FF
	C1 CODES		GR CODES (SUPPLEMENTAL CHARACTERS)					

Character Sets

ASCII Character Set

The left half of the multinational set is compatible with 7-bit or 8-bit environments and is the ASCII character set. The C0 codes are the ASCII control characters. They are in positions 0/0 through 1/15 (columns 0 and 1) of Table 6–2A.

The GL codes are the ASCII data characters. They are in positions 2/1 through 7/14 of Table 6–2A. They include all American English alphanumeric characters and punctuation symbols.

Supplemental Character Set

The 8-bit compatible right half of the multinational set (Table 6–2B) includes the C1 8-bit control characters in columns 8 and 9. The supplemental character set (in GR) is in positions 10/1 through 15/14. The supplemental character set includes alphabetic characters, accents, and diacritical marks from Western European alphabets. It also has word processing and special symbols not included in the ASCII character set.

In multinational mode, all characters on the 15 national keyboards (see Appendixes A and B) are available as standard characters. A character which is not on the keyboard, but is shown in Table 6 – 2B, can be generated by the host or by the operator through a compose character sequence (section 4.1).

The supplemental character set cannot be accessed in VT52 and VT100 modes.

National Character Sets

When the terminal is turned on or reset and is in national mode, GL is loaded with the national character set that corresponds to the keyboard type feature (set-up directory screen, section 3.4). The North American keyboard uses the ASCII character set. The other fourteen keyboards use the following character sets. In some cases, keyboards share a character set.

Keyboard	Character Set
British	British
Flemish	French
Canadian (French)	Canadian (French)
Danish	Norwegian/Danish
Finnish	Finnish
German	German
Dutch	Dutch
Italian	Italian
Swiss (French)	Swiss
Swiss (German)	Swiss
Swedish	Swedish
Norwegian	Norwegian/Danish
French/Belgian	French
Spanish	Spanish

The keyboards are shown in Appendix A and the character sets are shown in Appendix B.

Only one national character set can be selected at one time. The host can change between national and multinational mode, but cannot change the keyboard type (and therefore cannot change the selected national character set).

Host Controlled Character Sets

The terminal supports two character sets which can only be selected by the host: a special graphics character set which is stored in the terminal, and a user-defined character set which is loaded from the host.

Special Graphics Character Set

The special graphics character set (Table 6–3) has the uppercase alphanumeric characters and the punctuation characters from the ASCII character set (positions 2/0 through 5/14). The lowercase alphanumeric characters and remaining punctuation symbols have been replaced by special symbols and short line segments. These characters allow you to compose figures.

The special graphics set can be mapped into GL or GR. The recommended mapping is to switch between ASCII and special graphics in GL, since the special graphics set includes most of the ASCII data characters (see section 7.1).

User-Defined Character Set

A user-defined character set of up to 94 characters can be downline-loaded into the terminal and mapped into GL or GR. This feature is available only in VT200 modes. Section 7.2 explains how to design and load user-defined characters.

Chapter 6. Character and Control Codes

Table 6–3. Special Graphics

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	@	120 80 50	P	140 96 60	♦	160 112 70	— SCAN 3
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	▒	161 113 71	— SCAN 5
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	HT	162 114 72	— SCAN 7
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	#	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	FF	163 115 73	— SCAN 9
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	CR	164 116 74	├
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	LF	165 117 75	┤
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	°	166 118 76	┴
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	±	167 119 77	┬
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	NL	170 120 78	│
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	VT	171 121 79	≤
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	┘	172 122 7A	≥
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	[	153 107 6B	┐	173 123 7B	π
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	\	154 108 6C	┌	174 124 7C	≠
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	]	155 109 6D	└	175 125 7D	£
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	┼	176 126 7E	•
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	(blank)	157 111 6F	— SCAN 1	177 127 7F	DEL

KEY:

OCTAL	33	ESC
DECIMAL	27	
HEX	1B	

CHARACTER

6.4. Control Coding

Host commands to the terminal are in the form of C0 and C1 control characters or control sequences. In the discussions of control characters and sequences in this manual, the codes are represented by the characters shown in Table 6–2. The codes are interpreted correctly, whether or not the multinational character set is mapped into GL and GR.

Control Characters

Tables 6–4 and 6–5 define the action taken by the terminal when C0 and C1 control characters are received. C0 and C1 characters listed in Table 6–2 but not in Table 6–4 or 6–5 are ignored. The ASCII mnemonics SO and SI are called LS1 and LS0, respectively, to indicate more clearly the variety of possible character set mappings.

The C0 and C1 control characters listed in Table 6–2 are single-byte codes. C1 characters can be used only in an 8-bit environment, but each C1 character has an equivalent 7-bit sequence, as shown in Table 6–5.

Control Sequences

A control sequence is a sequence of one or more ASCII data characters preceded by CSI (8-bit environments) or by its 7-bit equivalent, ESC [. For example, the following two sequences are equivalent, turning autorepeat mode on:

ESC [? 8 h CSI ? 8 h

Sequences introduced by ESC (called escape sequences) consist of 7-bit characters, and can be used in 7-bit or 8-bit environments. Sequences introduced by CSI can only be used in 8-bit environments. Consequently, every 8-bit control code has a 7-bit equivalent escape sequence, as shown in Table 6–5.

Any C1 control character can be expressed as a 2-character escape sequence. The second character is 40 (hex) less than that of the C1 character. Conversely, any escape sequence with a second character in the range of 40 through 5F (hex) can be reduced to a single byte by removing ESC and adding 40 (hex) to the second character, thereby generating an 8-bit control character.

For example, the C1 characters CSI and HTS have the following 7-bit equivalents:

CSI = ESC [
HTS = ESC H

Table 6–4. C0 (ASCII) Control Characters (Part 1 of 2)

Mnemonic	Name	Action Taken
NUL	Null	Ignored when received.
ENQ	Enquiry	Generates answerback message.
BEL	Bell	Generates bell tone if bell is enabled (warning bell feature, section 3.9).
BS	Backspace	Moves cursor left one character position. If cursor is at left margin, cursor does not move.
HT	Horizontal tabulation	Moves cursor to next tab stop, or to right margin if there are no more tab stops. Does not cause autowrap.
LF	Line feed	Causes a line feed or new line operation, depending on the setting of new line mode (section 9.3).
VT	Vertical tabulation	Processed as LF.
FF	Form feed	Processed as LF.
CR	Carriage return	Moves cursor to left margin on current line.
SO (LS1)	Shift out (lock shift G1)	Maps G1 character set into GL. G1 is designated by a select character set (SCS) sequence (section 7.1).
SI (LS0)	Shift in (lock shift G0)	Maps G0 character set into GL. G0 is designated by an SCS sequence (section 7.1).

Table 6–4. C0 (ASCII) Control Characters (Part 2 of 2)

Mnemonic	Name	Action Taken
DC1	Device control 1	Also referred to as XON. If XOFF support is enabled, DC3 (XOFF) is cleared; keyboard unlocks; and terminal continues transmitting characters, unless keyboard action mode (section 9.3) is set.
DC3	Device control 3	Also referred to as XOFF. If XOFF support is enabled, terminal stops transmitting characters until DC1 is received.
CAN	Cancel	If received during an escape or control sequence, terminates and cancels the sequence. If received during a device control sequence, terminates the sequence. In either case, no error character is displayed.
SUB	Substitute	If received during an escape or control sequence, terminates and cancels the sequence. If received during a device control sequence, terminates the sequence. In either case, a reverse question mark (ʕ) is displayed.
ESC	Escape	Processed as escape sequence introducer. Terminates any control sequence in progress.
DEL	Delete	Ignored when received. May not be used as a time fill character.

Table 6–5. 7-Bit Equivalents for C1 Control Characters

Mnemonic	Equivalent 7-Bit Sequence	Name	Action Taken
IND	ESC D	Index	Moves cursor down one line in same column. If cursor is at bottom margin, screen scrolls up.
NEL	ESC E	Next line	Moves cursor to first position on next line. If cursor is at bottom margin, screen scrolls up.
HTS	ESC H	Horizontal tab set	Sets a horizontal tab stop at current cursor position.
RI	ESC M	Reverse index	Moves cursor up one line in same column. If cursor is at top margin, screen scrolls down.
SS2	ESC N	Single shift G2	Temporarily maps G2 character set into GL for next data character. G2 is designated by an SCS sequence (section 7.1).
SS3	ESC O	Single shift G3	Temporarily maps G3 character set into GL for next data character. G3 is designated by an SCS sequence (section 7.1).
DCS	ESC P	Device control string	Processed as opening delimiter of a device control string.
CSI	ESC [	Control sequence introducer	Processed as control sequence introducer.
ST	ESC \	String terminator	Processed as closing delimiter of a string opened by DCS.

Device Control Strings

Device control strings are special control sequences used to downline-load character sets (section 7.2) or definitions for user-defined keys (section 8.5).

A device control string is a string of characters which is used in a data stream as a logical entity. It consists of an opening delimiter, data, and a closing delimiter. The device control string format is:

DCS	Data	ST	(8-bit)
ESC P	Data	ESC \	(7-bit)

DCS or **ESC P** is the opening delimiter.

ST or **ESC** \ is the closing delimiter.

Data is the character set or the user-defined keys, as explained in sections 7.2 and 8.5.

6.5. Displayable Control Codes

The display control codes feature (display set-up screen, section 3.5) allows you to display control codes instead of executing them. This capability, which is provided for debugging purposes, is available only through the display set-up screen; it cannot be invoked from the host.

When the "Display Controls" option is selected, displayable characters are loaded into the character matrix according to the terminal type. If the terminal is in VT200 mode, C0, GL, C1, and GR are temporarily loaded as shown in Table 6–6. If the terminal is in VT52 or VT100 mode, only C0 and GL are used. All control functions are displayed, and most are not executed. The only exceptions are that LF, FF, and VT cause a new line (CR LF), and XOFF (DC3) and XON (DC1) maintain flow control if enabled. LF, FF, and VT are displayed before CR LF is executed; DC1 and DC3 are displayed after execution.

Displayable Control Codes

Table 6–6. Displayable Control Codes (Part 1 of 2)

ROW \ COL	0		1		2		3		4		5		6		7	
0	0 0 0	NU	20 16 10	DL	40 32 20		60 48 30	0	100 64 40	@	120 80 50	P	140 96 60	`	160 112 70	p
1	1 1 1	SH	21 17 11	D1	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	SX	22 18 12	D2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	EX	23 19 13	D3	43 35 23	#	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	ET	24 20 14	D4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	EQ	25 21 15	NK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	AK	26 22 16	SY	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BL	27 23 17	EB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	EC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	[	153 107 6B	k	173 123 7B	{
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	\	154 108 6C	l	174 124 7C	|
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	]	155 109 6D	m	175 125 7D	}
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	n	176 126 7E	~
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	_	157 111 6F	o	177 127 7F	DT

C0 CODES — GL CODES (ASCII CHARACTERS)

KEY:

OCTAL	33	ESC
DECIMAL	27	
HEX	1B	

CHARACTER

Table 6–6. Displayable Control Codes (Part 2 of 2)

COL / ROW	8		9		10		11		12		13		14		15	
0	200 128 80	8 0	220 144 90	9 0	240 160 A0	A 0	260 176 B0	°	300 192 C0	À	320 208 D0	D 0	340 224 E0	à	360 240 F0	F 0
1	201 129 81	8 1	221 145 91	9 1	241 161 A1	¡	261 177 B1	±	301 193 C1	Á	321 209 D1	Ñ	341 225 E1	á	361 241 F1	ñ
2	202 130 82	8 2	222 146 92	9 2	242 162 A2	¢	262 178 B2	²	302 194 C2	Â	322 210 D2	Ò	342 226 E2	â	362 242 F2	ò
3	203 131 83	8 3	223 147 93	9 3	243 163 A3	£	263 179 B3	³	303 195 C3	Ã	323 211 D3	Ó	343 227 E3	ã	363 243 F3	ó
4	204 132 84	8 4	224 148 94	9 4	244 164 A4	A 4	264 180 B4	B 4	304 196 C4	Ä	324 212 D4	Ô	344 228 E4	ä	364 244 F4	ô
5	205 133 85	8 5	225 149 95	9 5	245 165 A5	¥	265 181 B5	µ	305 197 C5	Å	325 213 D5	Õ	345 229 E5	å	365 245 F5	õ
6	206 134 86	8 6	226 150 96	9 6	246 166 A6	A 6	266 182 B6	¶	306 198 C6	Æ	326 214 D6	Ö	346 230 E6	æ	366 246 F6	ö
7	207 135 87	8 7	227 151 97	9 7	247 167 A7	§	267 183 B7	·	307 199 C7	Ç	327 215 D7	Œ	347 231 E7	ç	367 247 F7	œ
8	210 136 88	8 8	230 152 98	9 8	250 168 A8	¤	270 184 B8	B 8	310 200 C8	È	330 216 D8	Ø	350 232 E8	è	370 248 F8	ø
9	211 137 89	8 9	231 153 99	9 9	251 169 A9	©	271 185 B9	¹	311 201 C9	É	331 217 D9	Ù	351 233 E9	é	371 249 F9	ù
10	212 138 8A	8 A	232 154 9A	9 A	252 170 AA	ª	272 186 BA	º	312 202 CA	Ê	332 218 DA	Ú	352 234 EA	ê	372 250 FA	ú
11	213 139 8B	8 B	233 155 9B	9 B	253 171 AB	«	273 187 BB	»	313 203 CB	Ë	333 219 DB	Û	353 235 EB	ë	373 251 FB	û
12	214 140 8C	8 C	234 156 9C	9 C	254 172 AC	A C	274 188 BC	¼	314 204 CC	Ì	334 220 DC	Ü	354 236 EC	ì	374 252 FC	ü
13	215 141 8D	8 D	235 157 9D	9 D	255 173 AD	A D	275 189 BD	½	315 205 CD	Í	335 221 DD	Ÿ	355 237 ED	í	375 253 FD	ÿ
14	216 142 8E	8 E	236 158 9E	9 E	256 174 AE	A E	276 190 BE	B E	316 206 CE	Î	336 222 DE	D E	356 238 EE	î	376 254 FE	F E
15	217 143 8F	8 F	237 159 9F	9 F	257 175 AF	A F	277 191 BF	¿	317 207 CF	Ï	337 223 DF	ß	357 239 EF	ï	377 255 FF	□

C1 CODES

GR CODES
(SUPPLEMENTAL CHARACTERS)

Chapter 7. Character Set Commands

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Chapter 7. Character Set Commands

7.1. Character Set Selection

This section describes the host control sequences used to select and load different character sets. The sequences are used to change from the default mapping (loading) of the multinational character set with ASCII characters in GL and supplemental characters in GR. The terminal returns to this mapping whenever power is turned on or the terminal is reset.

The following character sets defined in section 6.2 can be used:

- Terminal character sets stored in ROM:
  - ASCII character set
  - Supplemental character set (VT200 modes only)
  - Special graphics character set
  - National character sets
- User-defined character set

Different sequences are used for terminal character sets and user-defined character sets.

Process Overview

Selecting a character set is a 2-stage process. First, a select character set (SCS) sequence designates the set as G0, G1, G2, or G3. This designation is used instead of the character set name to map the desired set into the character matrix. The designation remains until the terminal receives another SCS sequence.

Second, the set is mapped into GL or GR by using a lock shift or single shift sequence. The shift sequence specifies which designated character set is to be mapped (G0, G1, G2, or G3) and whether the destination is GL or GR. Lock shifts select that character set indefinitely (until another lock shift command is received); single shifts select the character set for a single character.

Detailed information on the specific sequences follows.

Select Character Set Sequences

In multinational mode, the default designation is the ASCII character set as G0 and G1 and the supplemental character set as G2 and G3. In national mode, the default designation is the character set specified by the keyboard type feature (section 3.4) as G0, G1, G2, and G3.

In national mode, the terminal supports only the national character set specified by the keyboard type feature. Thus, the only character sets which can be designated are ASCII, special graphics, and the national character set which corresponds to the keyboard type. For example, if French is the keyboard type, the Italian character set cannot be loaded.

Designating Terminal Character Sets

The terminal character sets are designated by using the escape sequences shown in Table 7–1. Select character set sequences specify the designation and the character set.

Chapter 7. Character Set Commands

Table 7–1. Terminal Character Set Designation Sequences

Designation	Sequence
G0	ESC (set
G1	ESC) set
G2 (VT200 mode only)	ESC * set
G3 (VT200 mode only)	ESC + set

The character for "set" in the sequences in Table 7–1 varies since it defines the character set to be used. The set characters are:

B = ASCII
<L = Supplemental (VT200 mode only)
0 = Special Graphics
A = British
4 = Dutch
C or 5 = Finnish
R = French
Q = French Canadian
K = German
Y = Italian
E or 6 = Norwegian/Danish
Z = Spanish
H or 7 = Swedish
= = Swiss

Designating User-Defined Character Sets

You can define a character set which can be downline-loaded into the character set matrix and accessed when the terminal is in VT200 mode. The user-defined character set can either replace a terminal character set currently in memory or be used in addition to it. If you replace a terminal set, the replacement occurs in both 80–column and 132–column modes. A user-defined set remains in effect until it is cleared by recall (section 3.12), default, self-test, or power on; or is redefined by a downline-load device control string (section 7.2).

Character Set Selection

A user-defined character set is designated by using the escape sequences shown in Table 7–2.

Table 7–2. Designating User-Defined Character Sets

Desired Designation	Escape Sequence
G0	ESC (Lcs
G1	ESC) Lcs
G2	ESC * Lcs
G3	ESC + Lcs

In these sequences, Lcs is the name of the user-defined character set. The name can contain zero, one, or two characters between 20 and 2F (hex), and must have a final character between 30 and 7E (hex). The following values of Lcs are defined:

A = U.K.
B = ASCII
< = Supplemental
0 = Special graphics

The recommended Lcs is:

sp @

Mapping Character Sets

After the character sets have been designated, you can map G0, G1, G2, or G3 into GL or GR by using lock shift or single shift control functions.

Using Lock Shifts

The lock shift control functions are defined in Table 7–3. Use of these sequences depends on the terminal type (see Figures 7–1 and 7–2). The character set remains in GL or GR until another locking shift is received.

Table 7–3. Lock Shift Sequences

Control Name	Control Code	Function
LS0 (lock shift G0)	SI	Map G0 into GL (default)
LS1 (lock shift G1)	SO	Map G1 into GL
LS1R (lock shift G1 right)	ESC ~	Map G1 into GR (VT200 mode only). May cause software incompatibility.
LS2 (lock shift G2)	ESC n	Map G2 into GL (VT200 mode only). May cause software incompatibility.
LS2R (lock shift G2 right)	ESC }	Map G2 into GR (default) (VT200 mode only)
LS3 (lock shift G3)	ESC o	Map G3 into GL (VT200 mode only). May cause software incompatibility.
LS3R (lock shift G3, right)	ESC |	Map G3 into GR (VT200 mode only)

Character Set Selection

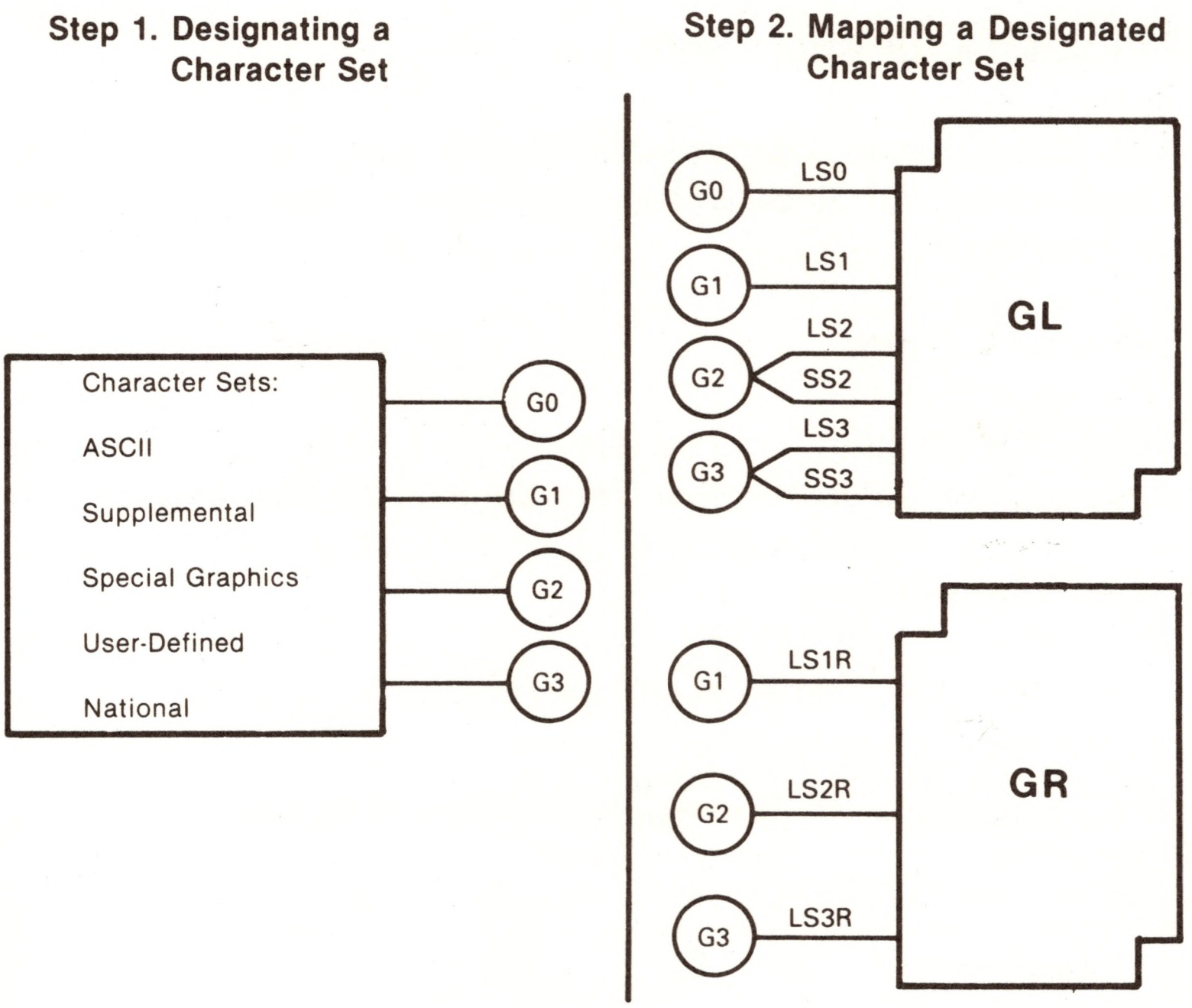


Figure 7–1. Changing Character Sets (VT200 Mode)

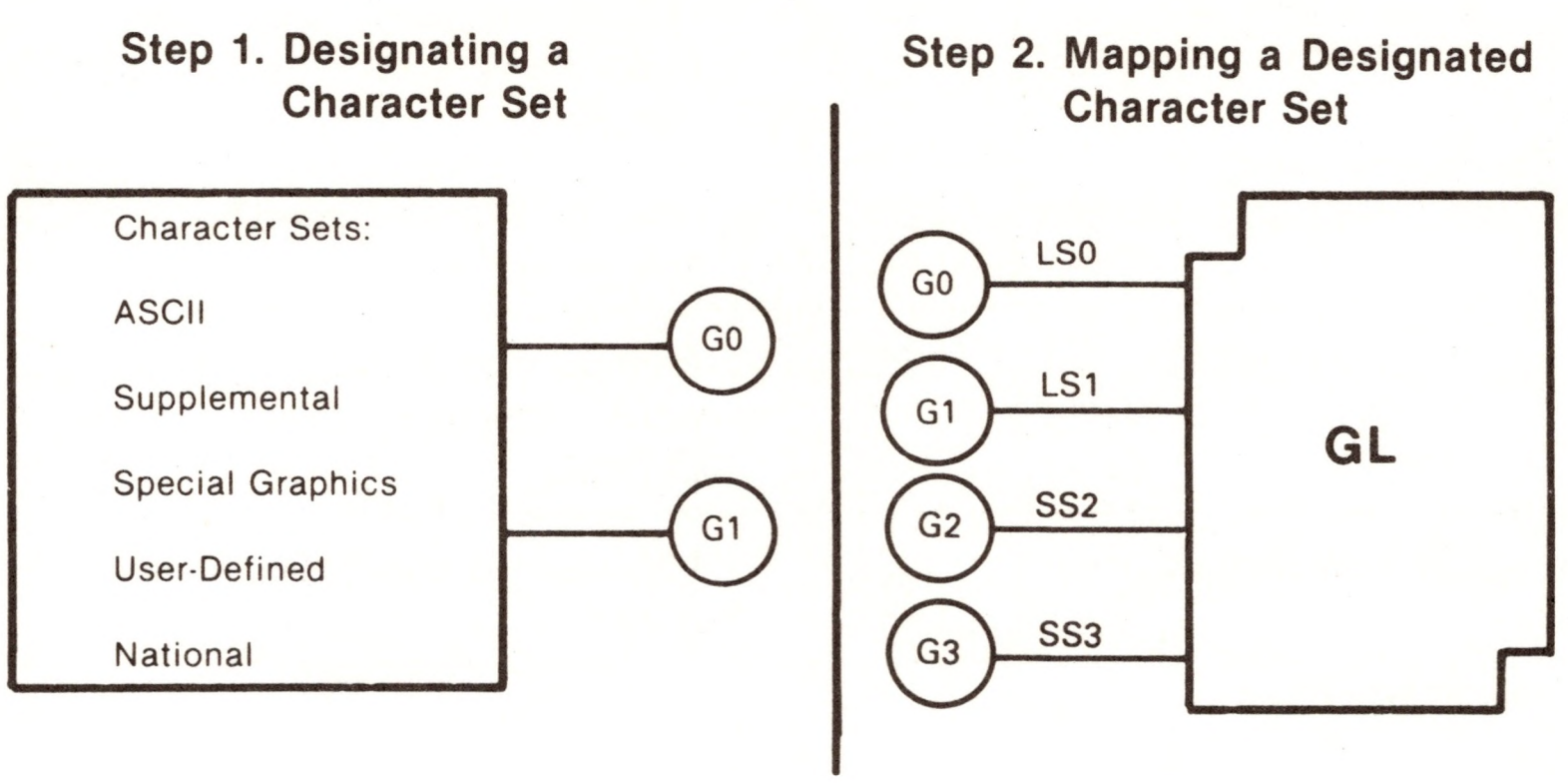


Figure 7–2. Changing Character Sets (VT100 Mode)

Using Single Shifts

G2 or G3 can be mapped into GL for a single data character at a time using the single shift control functions, as shown in Figures 7–1 and 7–2. The terminal returns to the previous character set after displaying a single data character.

ESC N	SS2

This sequence maps G2 into GL for the next data character.

ESC O	SS3

This sequence maps G3 into GL for the next data character.

NOTE:

In VT100 mode and national character set mode, G2 and G3 contain the character set selected by the keyboard type feature (section 3.4). Single shifts can be used as previously described.

7.2. User-Defined Character Sets

You can design a user-defined character set containing up to 94 displayable characters. In VT200 mode, you can load the character set into the terminal loadable character set buffer using a downline-load device control string. The loadable character set is not stored in nonvolatile ROM, so the character set is lost when terminal power is turned off.

Designing a Character Set

The terminal character cell size is a matrix of 7 x 10 pixels, as shown in Figure 7–3. Each pixel in the matrix has a binary value of 1 (pixel on) or 0 (pixel off).

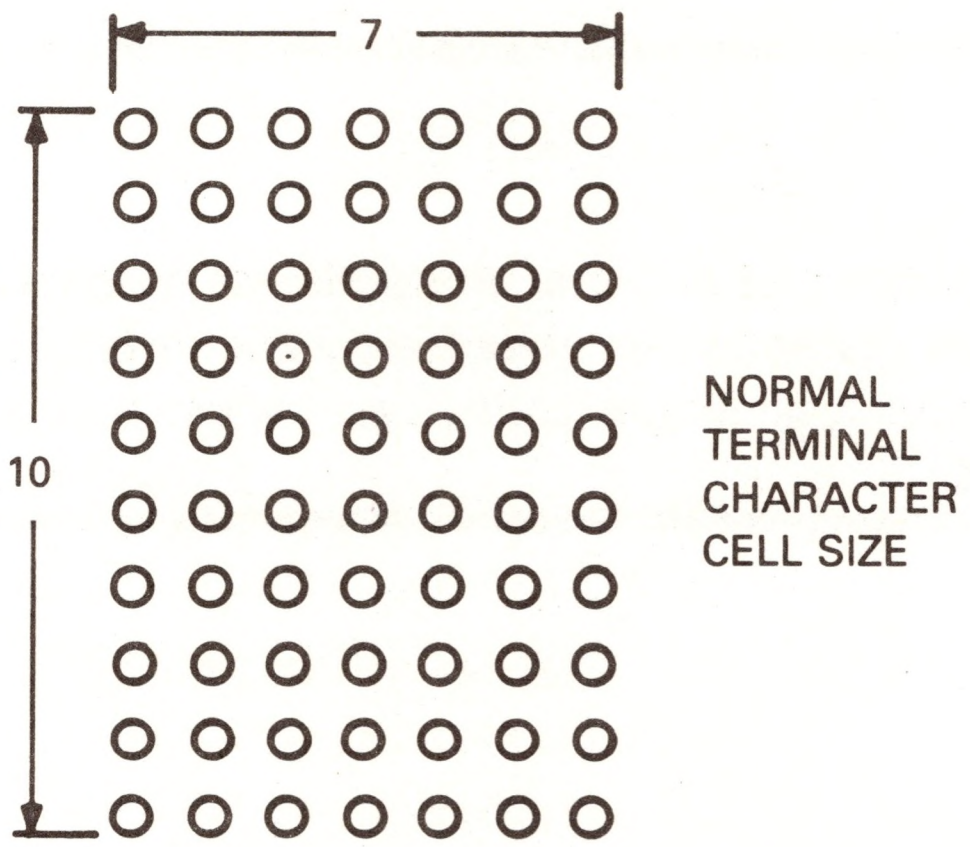
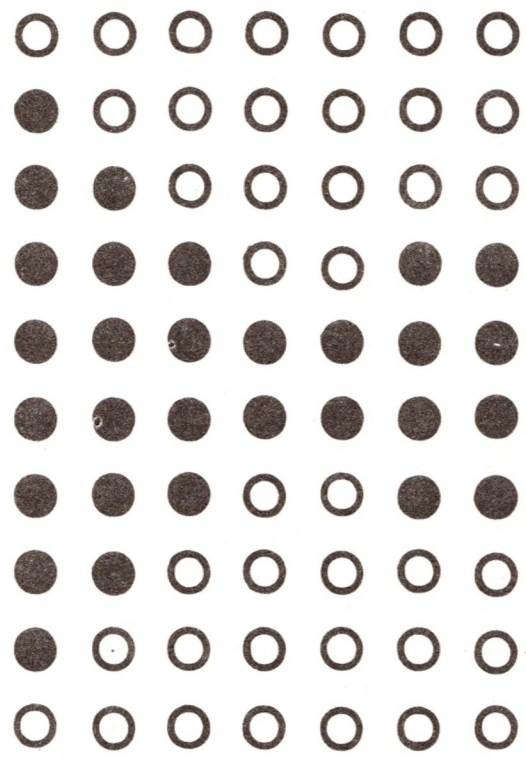


Figure 7–3. Character Cell Matrix

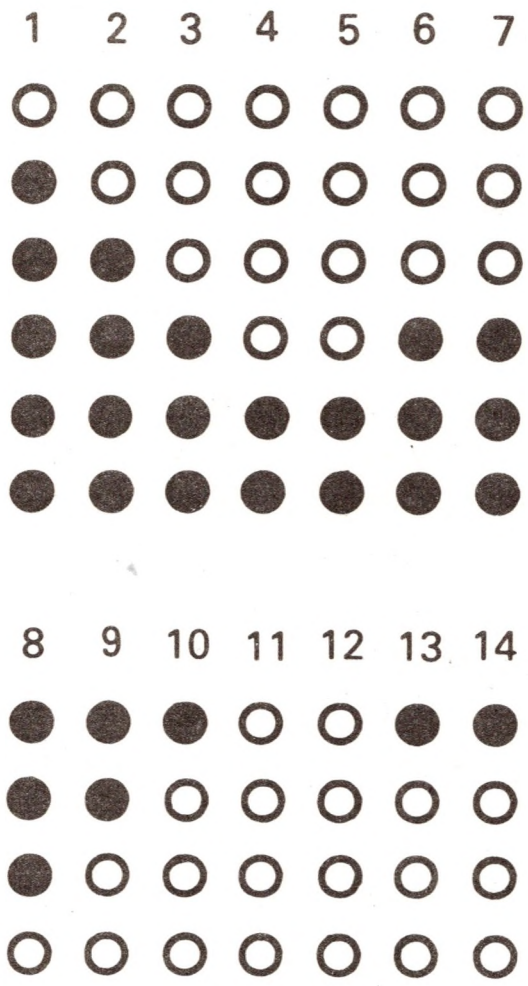
Chapter 7. Character Set Commands

The procedure for designing a loadable character is:

1. Design the character within the 7 x 10 matrix. The example shows the symbol for a speaker.

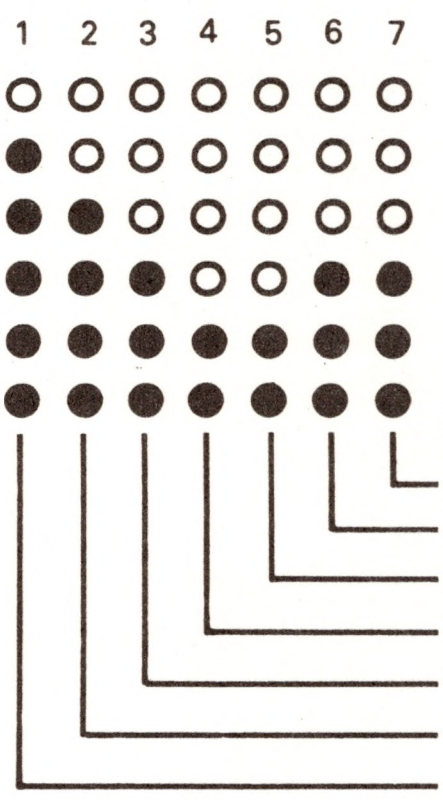


2. Split the character matrix into the top six and the bottom four rows.



3. Convert each of the 14 columns into binary, as shown in Figure 7–4. (The least signficant bit is at the top of the column; 1 = pixel on, 0 = pixel off.)

4. Convert each binary value to hex (see example in Figure 7–4).



BINARY	HEX	ADJ.	ASCII	Order Sent
111000	= 38	+ 3F = 77	= w	7
111000	= 38	+ 3F = 77	= w	6
110000	= 30	+ 3F = 6F	= o	5
110000	= 30	+ 3F = 6F	= o	4
111000	= 38	+ 3F = 77	= w	3
111100	= 3C	+ 3F = 7B	= {	2
111110	= 3E	+ 3F = 7D	= }	1

BINARY	HEX	ADJ.	ASCII	Order Sent
000001	= 01	+ 3F = 40	= @	14
000001	= 01	+ 3F = 40	= @	13
000000	= 00	+ 3F = 3F	= ?	12
000000	= 00	+ 3F = 3F	= ?	11
000001	= 01	+ 3F = 40	= @	10
000011	= 03	+ 3F = 42	= B	9
000111	= 07	+ 3F = 46	= F	8

Figure 7–4. Example of Pixel Conversion to ASCII

5. Add 3F (hex) adjustment value to each hex value, as shown in Figure 7–4. (3F is added to convert each column value to the range 3F through 7E.)

6. Look up the ASCII equivalent for each hex value in Table 6–2A.

7. Repeat steps 1 through 6 for each character you want to define.

8. After all characters are designed, downline load the character set using the instructions in the next section.

Downline-Loading a Character Set

A user-defined character set is loaded into the terminal through the downline load device control string (refer to section 6.3 for general information about device control strings). The format for the device control string is:

```
DCS    Parameters { Lcs Character1;Character2;...ST     (8-bit)
ESC P  Parameters { Lcs Character1;Character2;...ESC \  (7-bit)
```

DCS or **ESC P** is the device control string introducer.

Parameters, described in Table 7–4, define characteristics of how the character set is to be loaded. The parameters are identified by their position in the sequence. Trailing parameters can be omitted (they go to their default values). Parameter values are separated by semicolons. Invalid values are ignored.

{ identifies the end of the parameter characters and specifies that this device control string contains a loadable character set (rather than a user-defined key sequence).

Lcs is the character set name. This name is used in the select character set sequence to designate the character set.

Character1;Character2. . . are the ASCII characters for the columns in each defined character. The columns for a character are sent in the following order, with a slash separating the values for the top and bottom halves of the character cell:

1 2 3 4 5 6 7 / 8 9 10 11 12 13 14

For the symbol in Figure 7–4, this equates to the following sequence:

}{wooww/FB@??@@

Thus, each user-defined character is sent to the terminal in a sequence of 15 ASCII characters (counting the /). Semicolons are used to separate each character sequence.

ST or **ESC** \ is the string terminator which ends the downline load.

User-Defined Character Sets

Table 7–4. Downline Load Parameters

Name	Description
Font Number	The SVT-1220 has only one loadable character set buffer. Valid values are 0 or 1.
Starting Character	Selects starting position of character code table into which character set will be loaded. The 94 positions are numbered consecutively from 1 to 94, so 1 specifies position 2/1, 94 specifies position 7/14. Refer to section 6.1 for additional information. Sequential character positions are loaded. If your character set contains more than one character and the desired positions are nonsequential, you must use a separate downline-load for each group of positions.
Erase Control	Selects which positions are erased before loading this character set: 0 = Erase all positions 1 = Erase only positions that are reloaded
Character Cell Size	The cell size is 7 x 10. Valid values are 0 and 4.
Width Attribute	Specifies the width attribute: 0 or 1 = 80 columns (default) 2 = 132 columns Character sets designated for 80 columns can be used if the display is set for 132 columns, and vice versa.
Text Cell	The SVT-1220 supports only text cells. 0 and 1 are valid.

Example: Loading a Character

The procedure for loading and accessing a character set is described below, using the speaker symbol example (Figure 7–4).

1. Determine the following characteristics for the load:

	Example:
Font number	1
Starting character position	1 (position 2/1)
Erase control	1 (erase only reloaded characters)
Character cell size	omitted (= default)
Width attribute	omitted (= default of 80)
Lcs	sp @

2. Send the DCS string to the terminal.

   Example: DCS 1;1;1 {sp @}{wooww/FB@??@@ ST

3. Designate the character set, using one of the escape sequences defined in Table 7–3.

   Example: ESC * sp @ (Designates sp @ as G2)

4. Map the designated character set into GL or GR. Then send the position character to display the character.

   Example: SS2 ! (SS2 maps G2 into GL for next character, which is the character in the !–first– position.)

Clearing a User-Defined Character Set

The following downline-load device control sequence clears the loaded set by using the erase control parameter:

```
DCS 1;1;0 {sp @ ST
```

User-defined character sets are also cleared by performing the power-on self-test, selecting the set-up "Recall" or "Default" functions (section 3.4), or using the reset to initial state sequence (section 11.2).

Chapter 8. Keyboard Codes

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Chapter 8. Keyboard Codes

This chapter describes the codes produced through the keyboard that the terminal transmits to a host program. The terminal can use any of fifteen national keyboards (Appendix A). Section 2.2 describes keyboard use.

Key codes generated in VT52 mode are listed if they differ from those generated in the ANSI-compatible (VT200 and VT100) modes.

8.1. Data Key Codes

The data keys generate alphanumeric characters. On the North American keyboard, the data keys show only ASCII characters (Table 6–2A); there are no supplemental multinational characters (Table 6–2B) among the standard keys. This is a special case, since the other 14 keyboards have some data keys that generate supplemental characters. The characters assigned to keycaps vary among keyboards, and some characters (special symbols or characters with diacritical marks) are not available as data keys on particular keyboards. However, any multinational character that is not available on a data key can be created on any keyboard using a compose sequence (section 4.2).

Regardless of which keyboard is used and how a data character is created, each character is represented by a unique code according to the character's position in the code table (Table 6–1). All GL characters can be used in both 7-bit (VT52 mode, VT100 mode, or VT200 mode with 7-bit host line) and 8-bit (VT200 mode with 8-bit host line) environments, while GR characters can be used only in 8-bit environments.

All keyboards except the North American keyboard have one or more data keys that transmit different data characters (and corresponding codes), depending on the data processing symbols feature (keyboard set-up screen, section 3.9). Keys affected by this feature have more than two characters on the keycap. The characters on the right side of the keycap are generated when the "Data Processing" option is selected, and the characters on the left side of the keycap are generated when the "Typewriter Keys" option is selected. The characters on the right side of the keycap are shifted (uppercase) or unshifted (lowercase), in the same way as other nonalphabetic keys. See Appendix B for additional information.

8.2. Function Key Codes

Main Keyboard Function Keys

The main keyboard function control characters are described in Table 8–1. The codes for the control characters are defined in Table 6–2A.

Table 8–1. Main Keyboard Control Characters

Key	Control Characters
DELETE	The DELETE key transmits a DEL character.
TAB	The TAB key transmits an HT character.
RETURN	The RETURN key transmits either a CR character or a CR and an LF character, depending on the state of the line feed/new line mode (section 9.3).
SPACE BAR	The space bar transmits an SP character.

Editing Keypad Keys

The editing keypad provides editing keys and cursor control keys. Table 8–2 defines the codes generated by the editing keys in VT200 mode, and Table 8–3 defines the codes generated by the cursor control keys.

Table 8–2. Codes Generated by Editing Keys

Key	Code Generated*
FIND	CSI 1
INSERT HERE	CSI 2
REMOVE	CSI 3
SELECT	CSI 4
PREV SCREEN	CSI 5
NEXT SCREEN	CSI 6

* In VT100 or VT52 modes, the editing keys do not generate codes.

Function Key Codes

Table 8–3. Codes Generated by Cursor Control Keys

Keys	ANSI Modes*		VT52 Mode
	Normal Cursor Mode	Application Cursor Mode	(Normal or Application Mode)
SCAN UP	CSI A	SS3 A	ESC A
SCAN DOWN	CSI B	SS3 B	ESC B
SCAN RIGHT	CSI C	SS3 C	ESC C
SCAN LEFT	CSI D	SS3 D	ESC D

* ANSI mode includes the VT200 and VT100 modes.

Numeric Keypad Keys

The characters generated by the numeric keypad keys depend on the selection of two modes: the ANSI/VT52 mode and the keypad mode. The keypad setting is usually selected by the host (section 9.4), but can be selected through the keypad codes feature on the general set-up screen (section 3.6). Table 8–4 lists the character codes generated by the numeric keypad in ANSI (VT100, VT200) mode and in VT52 mode.

Table 8–4. Codes Generated by Numeric Keypad Keys

	ANSI Mode*		VT52 Mode	
Key	Keypad Numeric Mode	Keypad Application Mode	Keypad Numeric Mode	Keypad Application Mode
0	0	SS3 p	0	ESC ? p
1	1	SS3 q	1	ESC ? q
2	2	SS3 r	2	ESC ? r
3	3	SS3 s	3	ESC ? s
4	4	SS3 t	4	ESC ? t
5	5	SS3 u	5	ESC ? u
6	6	SS3 v	6	ESC ? v
7	7	SS3 w	7	ESC ? w
8	8	SS3 x	8	ESC ? x
9	9	SS3 y	9	ESC ? y
–	– (minus)	SS3 m	– (minus)	ESC ? m**
,	, (comma)	SS3 l	, (comma)	ESC ? l**
.	. (period)	SS3 n	. (period)	ESC ? n
ENTER†	CR or CR LF	SS3 M	CR or CR LF	ESC ? M
PF1	SS3 P	SS3 P	ESC P	ESC P
PF2	SS3 Q	SS3 Q	ESC Q	ESC Q
PF3	SS3 R	SS3 R	ESC R	ESC R
PF4	SS3 S	SS3 S	ESC S	ESC S**

* ANSI mode includes all VT200 and VT100 modes.

** You cannot generate these sequences in VT52 mode.

† In keypad numeric mode, ENTER generates the same codes as RETURN. The codes depend on the line feed/new line mode (section 9.3).

Function Key Codes

Top-Row Function Keys

The 20 top-row function keys are named F1 through F20. Keys F1 through F5 (labeled HOLD SCREEN, PRINT SCREEN, SET-UP, DATA/TALK, and BREAK) are local function keys which do not transmit codes. Keys F6 through F20 transmit the codes defined in Table 8–5.

The F-key shift feature (enhancements set-up screen, section 3.11) determines whether these codes are generated by the unshifted or shifted level of the keys; host or operator user-defined codes (if any) are produced by the other level (see sections 4.4 and 8.5).

Table 8–5. Top-Row Function Key Codes

Key	VT200 Codes	VT100 & VT52 Codes
F6	CSI 1 7 ~	
F7	CSI 1 8 ~	
F8	CSI 1 9 ~	
F9	CSI 2 0 ~	
F10	CSI 2 1 ~	
F11 (ESC)	CSI 2 3 ~	ESC
F12 (BS)	CSI 2 4 ~	BS
F13 (LF)	CSI 2 5 ~	LF
F14	CSI 2 6 ~	
HELP	CSI 2 8 ~	
DO	CSI 2 9 ~	
F17	CSI 3 1 ~	
F18	CSI 3 2 ~	
F19	CSI 3 3 ~	
F20	CSI 3 4 ~	

8.3. 7-Bit Control Codes

Table 8–6 defines the keys used to generate control codes. These keys, which are valid on all keyboards in all modes, are used to generate C0 7-bit control characters. The keyboard cannot generate C1 8-bit control characters.

Table 8–6. Keys Used to Generate 7-Bit Control Characters (Part 1 of 2)

Control Character	Key Pressed With CTRL	Dedicated Function Key
NUL	2 or space	
SOH	A	
STX	B	
ETX	C	
EOT	D	
ENQ	E	
ACK	F	
BEL	G	
BS	H	F12 (BS)*
HT	I	TAB
LF**	J	F13 (LF)*
VT**	K	
FF**	L	
CR**	M	RETURN
SO	N	
SI	O	
DLE	P	

* Keys F11, F12, and F13 generate these control characters only in VT52 or VT100 mode.

* Cursor moves to first position of next line.

7-Bit Control Codes

Table 8–6. Keys Used to Generate 7-Bit Control Characters (Part 2 of 2)

Control Character	Key Pressed With CTRL	Dedicated Function Key
DC1 DC2	Q** R	
DC3	S**	
DC4	T	
NAK	U	
SYN	V	
ETB	W	
CAN	X	
EM	Y	
SUB	Z	
ESC	3 or [	F11 (ESC)*
FS	4	
GS	5 or]	
RS	6 or ~	
US	7 or ? or /	
DEL	8	DELETE

* Keys F11, F12, and F13 generate these control characters only in VT52 or VT100 mode.

** Produces the specified control character only if XOFF support is disabled (XOFF feature, communications set-up screen, section 3.7). If XOFF support is enabled, CTRL S is a hold screen local function, and CTRL Q frees the hold.

8.4. Keyboard Characteristics

Autorepeating

Autorepeating can be enabled or disabled through the autorepeat feature on the keyboard set-up screen (section 3.9) or the autorepeat mode sequence (section 9.4). If autorepeating is turned on while a key is autorepeating, the key continues repeating. Otherwise, keys start autorepeating after a delay of 1/2-second. When the host transmit speed is less than 2400 baud, keys cycle at a slower rate to accommodate host processing speed.

The following keys do not autorepeat: HOLD SCREEN, PRINT SCREEN, SET-UP, DATA/TALK, BREAK, COMPOSE CHARACTER, SHIFT, RETURN, CAPS, LOCK, and CTRL. Keys pressed with SHIFT, CAPS, LOCK, or CTRL do autorepeat.

Keyboard Lock and Unlock

The following conditions lock the keyboard:

- The program sends a command to set the keyboard action mode to locked (section 9.3).
- The keyboard output buffer is full.

When the keyboard is locked, all keys except HOLD SCREEN, PRINT SCREEN, SET-UP, DATA/TALK, and BREAK are disabled, and the Wait indicator lights.

Keyboard Characteristics

The keyboard can be unlocked by any of the following:

- Reducing output buffer contents (assuming that the keyboard action mode is not set to locked).
- The terminal receives an unlock (reset) keyboard action mode sequence when the buffer is not full (section 13.1). A soft terminal reset (section 11.2) and the "Reset Terminal" function on the set-up directory screen (section 3.4) reset keyboard action mode.
- Performing any of these set-up functions (section 3.4): "Clear Comm," "Reset Terminal," "Recall," or "Default." Pressing SET-UP unlocks the keyboard while the set-up screen is displayed. If one of these functions is not selected, the keyboard locks again when the set-up screen is exited.
- Performing the power-up self-test or resetting to initial state (sections 11.2 and 11.3).

8.5. User-Defined Keys

Overview

Fifteen top-row function keys on the SVT-1220 are programmable: F6 through F14, DO, HELP, and F17 through F20. When the terminal is in VT200 mode, downline loading one or more key sequences for the programmable function keys can be accomplished by using user-defined keys (UDK) device control strings. The programmable function keys are inoperative in VT100 and VT52 modes.

The host can downline-load key definitions only if the lock key definitions feature (general set-up screen, section 3.6) is set to "User-Defined Keys Unlocked." Before sending a UDK downline-load sequence, the host should check the status of this feature through a UDK device status request (section 11.1).

The F-key shift feature on the enhancements set-up screen (section 3.11) determines whether the user-defined values of the keys or the codes in Table 8–6 are accessed by pressing the function key with the SHIFT key.

256 bytes are available for user key definitions. This space is used by both the host and the operator. A key definition can use any portion of the unused space, which is supplied on a first-come/first-served basis. Once the 256 bytes are used, no more keys can be redefined until space is freed, unless you free up space by:

1. Clearing some or all keys as part of the UDK device control string.
2. Redefining a key with a shorter sequence.
3. Clearing the definition through the "Recall" function on the set-up directory screen.
4. Turning terminal power off, unless "Save User-Defined Keys" is selected (general set-up screen, section 3.6).

If a function key load is aborted, the keys are locked, the successfully loaded portion is saved, and the rest of the UDK sequence is sent to the screen. An invalid DCS hex value in a key definition string results in an aborted load.

UDK Device Control String Format

For general information about device control strings, refer to section 6.3. The device control string format for downline loading UDK functions is:

```
DCS   Cp ; Lp | ky1/st1;ky2/st2;. . .kyn/stn ST     (8-bit)
ESC P Cp ; Lp | ky1/st1;ky2/st2;. . .kyn/stn ESC\ (7-bit)
```

where:

DCS = Control string introducer
Cp = Clear parameter
Lp = Lock parameter
| = UDK string identifier
kyn/stn = Key definition strings
ST = String terminator

Each string component is described in the following paragraphs.

Device Control String. DCS (ESC P) is the device control string introducer.

Clear Parameter (Cp). The clear parameter determines which keys are cleared and when.

Omitted or 0	Clears all keys before loading new values
1	Clears each key that is to be reloaded just before loading it, without clearing keys which are not being redefined.

Option 1 should be used with care, since a key load will fail if the number of bytes currently free is less than the number needed by that key, even if subsequent key loads would clear enough space. If the operator has defined keys, those definitions will reduce the amount of available space, but the host will not know that the space is used.

Lock Parameter (Lp). The lock parameter determines whether or not the key definitions are locked after they have been loaded. Lp is separated from CP by a semicolon as a delimiter.

Omitted or 0	Lock the keys after loading
1	Do not lock the keys against future redefinition (this does not unlock the keys)

Locking the keys prevents future redefinition, and the terminal operator must unlock the keys for redefinition using the lock key definitions feature (general set-up screen, section 3.6). If Lp is set to 1, the keys are available for further definition with another UDK string.

| **Character.** The vertical bar (hex 7C) designates this control string as a UDK device control string (rather than a character set downline- load).

Key Definition Strings (Kyn/Stn). The key definition strings are the data between the final character and the string terminator. Each key definition string consists of a key selector number (Kyn) and a string parameter (Stn) separated by a slash (/). Kyn specifies the particular key to be redefined. Table 8–7 lists the definable keys and their identifying values.

Stn is the encoded contents of the key. The string parameters (Stn) consist of hex values in the range of 30 through 39 (0 through 9), 41 through 46 (A through F), and 61 through 66 (a through f). These combined hex values represent an 8-bit quantity, allowing any of the 256 character codes to be used in the key sequence.

Key definition strings can be used in any order and multiple definitions can be specified by using a semicolon as a delimiter.

String Terminator (ST). ST (ESC \) is the string terminator.

Table 8–7. User Key Location Codes

Key	Kyn
F6	17
F7	18
F8	19
F9	20
F10	21
F11	23
F12	24
F13	25
F14	26
HELP	28
DO	29
F17	31
F18	32
F19	33
F20	34

Examples:

To clear keys, send the following string:

DCS 0 ; 1 | ST

To lock keys, send the following string:

DCS 1 ; 0 | ST

To define key F9 to send the word "RUN" without clearing or locking any other keys, the first part of the string is:

DCS 1 ; 1 | 2 0 /

The 20 after the final character identifies key F9. The definition following the slash character defines the key function. The codes for "RUN" are:

R = 52 hex
U = 55 hex
N = 4E hex

Thus, after the slash character, send:

```
52  55  4E  ST
R   U   N
```

The ST character specifies the end of the string.

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Chapter 9. Terminal Mode Commands

A terminal mode defines a particular terminal characteristic, such as the number of columns on the screen. Other types of modes are defined in Chapter 5.

9.1. Terminal Mode Summary

Selectable terminal modes, and their set and reset control sequences, are listed in Tables 9–1 and 9–2. ANSI mode sequences (Table 9–1) are introduced by CSI, private modes (Table 9–2) by CSI ? (usually). Each mode can be set or reset individually, as described in sections 9.3 and 9.4. Terminal modes can also be set or reset in strings using the set mode or reset mode control sequences (section 9.2).

Most modes can be changed by the operator through set-up screen features (Chapter 3); the modes which cannot be changed by the operator are identified in Tables 9–1 and 9–2. The operator can prevent changes to certain feature settings (identified in Tables 9–1 and 9–2) by selecting "User Features Locked" on the general set-up screen (section 3.6).

Terminal Mode Summary

Table 9–1. ANSI Modes

Name	Set Mode	Reset Mode
Insertion/Replacement**	Insert CSI 4 h	Replace CSI 4 l
Line Feed/New Line	New Line CSI 2 0 h	Line Feed CSI 2 0 l
Keyboard Action*	Locked CSI 2 h	Unlocked CSI 2 l
Send/Receive	Local Echo Off CSI 1 2 h	Local Echo On CSI 1 2 l
Transmit Termination	Screen CSI 1 6 h	Block CSI 1 6 l

Table 9–2. Private Modes (Part 1 of 2)

Name	Set Mode	Reset Mode
ANSI/VT52	N/A	VT52 CSI ? 2 l
Autorepeat*	On CSI ? 8 h	Off CSI ? 8 l
Autowrap	On CSI ? 7 h	Off CSI ? 7 l
Character Set	National CSI ? 4 2 h	Multinational CSI ? 4 2 l
Column	132 Columns CSI ? 3 h	80 Columns CSI ? 3 l

Note: For each mode, the sequence ends in "h" for the set option, and in lowercase "l" for the reset option.

* Operator feature which can be locked to prevent change by host (see section 3.6)

** Not an operator feature

Chapter 9. Terminal Mode Commands

Table 9–2. Private Modes (Part 2 of 2)

Name	Set Mode	Reset Mode
Cursor Key	Application CSI ? 1 h	Cursor CSI ? 1 l
Keypad	Application ESC =	Numeric ESC >
Origin Mode**	Origin CSI ? 6 h	Absolute CSI ? 6 l
Print Extent	Full Screen CSI ? 1 9 h	Scrolling Region CSI ? 1 9 l
Print Form Feed	On CSI ? 1 8 h	Off CSI ? 1 8 l
Screen*	Reverse CSI ? 5 h	Normal CSI ? 5 l
Scrolling*	Smooth CSI ? 4 h	Jump CSI ? 4 l
Text Cursor Enable	Displayed CSI ? 2 5 h	Not Displayed CSI ? 2 5 l
Edit Mode	Edit CSI ? 1 0 h	Interactive CSI ? 1 0 l
Space Suppression	On CSI ? 1 3 h	Off CSI ? 1 3 l
Transmit Execution	Immediate CSI ? 1 4 h	Deferred CSI ? 1 4 l
Page Dump**	Enable CSI ? 1 2 h	Disable CSI ? 1 2 l

Note: For each mode, the sequence ends in "h" for the set option, and in lowercase "l" for the reset option.

* Operator feature which can be locked to prevent change by host (see section 3.6)

** Not an operator feature

9.2. Setting and Resetting Modes

Set Mode

The set mode command for ANSI modes is:

CSI Ps ; . . . . ; Ps h

The set mode command for private modes is:

CSI ? Ps ; . . . . ; Ps h

These commands set the ANSI and private modes in strings, using the parameters (Ps) listed in Tables 9–3 and 9–4. ANSI modes and private modes cannot be mixed in the same set mode string.

Reset Mode

The reset mode command for ANSI modes is:

CSI Ps ; . . . . . ; Ps l

The reset mode command for private modes is:

CSI ? Ps ; . . . . . ; Ps l

These commands reset the ANSI and private modes in strings, using the parameters (Ps) listed in Tables 9–3 and 9–4. ANSI modes and private modes cannot be mixed in the same reset mode string.

Chapter 9. Terminal Mode Commands

Table 9–3. ANSI-Standardized Modes

Name	Parameter (Ps)
Insertion/Replacement	4
Line Feed/New Line	2 0
Keyboard Action	2
Send/Receive	1 2
Transmit Termination	1 6
Error (ignored)	0

Table 9–4. ANSI-Compatible Private Modes

Name	Parameter (Ps)
ANSI/VT52	2
Autorepeat	8
Autowrap	7
Character Set	4 2
Column	3
Cursor Key	1
Origin Mode	6
Print Extent	1 9
Print Form Feed	1 8
Screen	5
Scrolling	4
Text Cursor Enable	2 5
Edit Mode	1 0
Space Suppression	1 3
Transmit Execution	1 4
Page Dump	1 2
Error (ignored)	0

9.3. ANSI Mode Descriptions

For each mode, the sequence ends in "h" for the set option, and in lowercase "l" for the reset option.

Insertion/Replacement Mode

The terminal displays received characters at the cursor position. Insertion/replacement mode determines how new characters are added to the screen. The insert or replace mode is identified on the status line (Table 2–2).

Insert	CSI 4 h	New display character moves old display characters to the right. Any character moved past the right margin is lost.
Replace	CSI 4 l	New display character overwrites old display character at the cursor position.

Line Feed/New Line Mode

Line feed/new line mode selects the control character(s) transmitted to the host by the RETURN and ENTER keys. ENTER transmits the same code as RETURN only when the numeric keypad is in keypad numeric mode (section 9.4).

Line feed/new line mode also selects the action taken by the terminal when it receives line feed (LF), form feed (FF), and vertical tab (VT) codes. These three codes are always processed identically.

New Line	CSI 2 0 h	A received LF, FF, or VT code moves the cursor to the first column of the next line. RETURN key transmits both a CR and an LF code.
Line Feed	CSI 2 0 l	A received LF, FF, or VT code moves the cursor to the next line in the current column. RETURN key transmits a CR code only.

ANSI Mode Descriptions

Keyboard Action Mode

Keyboard action mode is used to lock and unlock the keyboard. When the keyboard is locked, no codes can be transmitted from the keyboard to the host. The Wait indicator lights to alert the operator that the keyboard is locked. This command is ignored if the operator has selected "User Features Locked" on the general set-up screen (section 3.6).

Locked	CSI 2 h	Locks the keyboard for subsequent keystrokes.
Unlocked	CSI 2 l	Unlocks the keyboard, unless it is locked by DC3.

Send/Receive Mode

Send/receive mode turns local echo on or off.

Local echo off	CSI 1 2 h	When the terminal transmits characters to the host, the host must echo characters back to the terminal display.
Local echo on	CSI 1 2 l	Every character transmitted from the keyboard automatically appears on the screen. Therefore, the host does not have to transmit (echo) the character back to the terminal display.

Transmit Termination Mode

In edit mode transmission (see section 13.3), transmit termination determines the area of data which is transmitted.

Screen	CSI 1 6 h	All data from home to the end of the screen is transmitted.
Block	CSI 1 6 l	All data from home or the last block marker through the cursor location is transmitted.

9.4. Private Mode Descriptions

For each mode, the sequence ends in "h" for the set option, and in lowercase "l" for the reset option.

ANSI/VT52 Mode

In ANSI mode, the reset state of this sequence selects VT52 compatibility mode, in which the terminal responds to private sequences like a VT52. There is no set state for this mode. This sequence is ignored if the terminal is in edit mode.

VT52	CSI ? 2 l	Sets the terminal to VT52 mode.

Autorepeat Mode

Autorepeat mode selects automatic key repeating. When autorepeat mode is set, a key pressed for more than one-half second automatically repeats the transmission of the character. The following keys do not repeat: HOLD SCREEN, PRINT SCREEN, SET-UP, DATA/TALK, BREAK, RETURN, COMPOSE CHARACTER, LOCK, SHIFT, and CTRL. This command is ignored if the operator has selected "User Features Locked" on the general set-up screen (section 3.6).

On	CSI ? 8 h	Selects autorepeating. A key pressed for more than 0.5 second repeats.
Off	CSI ? 8 l	Turns off autorepeat.

Autowrap Mode

This mode selects where received data characters appear when the cursor is at the right margin.

On	CSI ? 7 h	Turns autowrap on. When the cursor is at the right margin, characters are placed on the next line. The display scrolls up if the cursor is at the end of the scrolling region.
Off	CSI ? 7 l	Turns off autowrap. When the cursor is at the right margin, characters replace previously displayed characters.

Column Mode

Column mode determines the number of columns per line (80 or 132). When the terminal receives the sequence, the screen is erased and the cursor moves to the home position. The scrolling region is set to full screen (24 lines).

132 Columns	CSI ? 3 h	Selects 132 columns per line.
80 Columns	CSI ? 3 l	Selects 80 columns per line.

Private Mode Descriptions

Cursor Key Mode

The codes generated by the cursor keys (Table 8–3) depend on the state of this mode.

Application	CSI ? 1 h	Cursor keys generate application control functions.
Cursor	CSI ? 1 l	Cursor keys generate ANSI cursor control sequences.

Keypad Mode

The numeric keypad generates either numeric characters or control functions (see Table 8–4). When the terminal is powered on or reset, the terminal selects numeric keypad mode.

Application	ESC =	Keypad generates application control functions.
Numeric	ESC >	Keypad generates characters that match the numeric, comma, period, and minus sign keys on main keyboard. PF1 through PF4 generate control functions.

Origin Mode

Origin mode allows cursor addressing relative to a user-defined home position (origin). This mode resets when the terminal is powered on or reset. It does not affect the erase in display function (section 10.6).

Origin	CSI ? 6 h	Selects home position with line numbers starting at the top margin of the scrolling region. The cursor cannot move out of the scrolling region.
Absolute	CSI ? 6 l	Selects home position in the upper-left corner of the screen. Line numbers are independent of scrolling region. The cursor can be moved out of the scrolling region by the cursor up sequence (section 10.1).

Print Extent Mode

Print extent mode determines whether the full screen or the scrolling region is printed during a print screen operation.

Full Screen	CSI ? 1 9 h	Full screen is printed during a print screen operation.
Scrolling Region	CSI ? 1 9 l	Scrolling region is printed during a print screen operation.

Private Mode Descriptions

Print Form Feed Mode

This mode determines whether or not the terminal transmits a print termination character (form feed, FF) after a screen print.

On	CSI ? 1 8 h	The terminal transmits FF to the printer after each print screen operation.
Off	CSI ? 1 8 l	No termination character (FF) is transmitted to the printer.

Screen Mode

Screen mode selects either a dark or light (reverse) display background for the screen. This command is ignored if the operator has selected "User Features Locked" on the general set-up screen (section 3.6).

Reverse	CSI ? 5 h	Reverse video (dark characters on a light background).
Normal	CSI ? 5 l	Normal screen (light characters on a dark background).

Scrolling Mode

Scrolling is the upward or downward movement of data on the screen. This command is ignored if the operator has selected the "User Features Locked" option on the general set-up screen (section 3.6).

Smooth	CSI ? 4 h	Terminal adds no more than 12 lines per second to screen (actual rate set by smooth scroll speed feature, section 3.5).
Jump	CSI ? 4 l	Terminal adds lines to screen as fast as possible.

Text Cursor Enable Mode

Text cursor enable mode determines if the cursor is visible.

Displayed	CSI ? 2 5 h	Cursor is visible.
Not displayed	CSI ? 2 5 l	Cursor is not visible.

Character Set Mode

Character set mode determines whether the terminal uses the 8-bit multinational character set or a 7-bit national character set (see section 6.2).

National	CSI ? 4 2 h	Terminal generates characters from the selected 7-bit national character set.
Multinational	CSI ? 4 2 l	Terminal generates characters from the 8-bit multinational character set, which includes the 7-bit ASCII subset.

9.5. Edit Mode Commands

The SVT-1220 provides a partial VT131 block mode emulation; this capability is an enhancement to the SVT-1220 which is not available on the VT220. The following control sequences are used for edit mode. Section 4.3 describes key usage in edit mode. Section 13.3 has additional information on edit mode communication protocol.

Edit Mode

Edit mode determines when keystrokes are sent to the host.

Edit Mode	CSI ? 1 0 h	All keystrokes are sent to the screen. The operator must press the ENTER key to initiate transmission to the host (see sections 4.3 and 13.3).
Interactive Mode	CSI ? 1 0 l	Each keystroke is immediately transmitted to the host.

Space Suppression Mode

In edit mode transmission, the space suppression command determines whether or not trailing space characters are suppressed.

On	CSI ? 1 3 h	Trailing space characters are suppressed. CR and LF are transmitted.
Off	CSI ? 1 3 l	All characters in the terminal memory are transmitted, including CR and LF.

Transmit Execution Mode

In edit mode transmission, transmit execution determines whether or not, after the operator presses the ENTER key, the host must request the transmission.

Immediate	CSI ? 1 4 h	As soon as the ENTER key is pressed, all data is transmitted.
Deferred	CSI ? 1 4 l	When the ENTER key is pressed, a request-for-transmission code (ESC S) is sent to the host. The terminal transmits the data when it receives a solicitation code (ESC 5 or ESC 6) from the host.

Page Dump Mode

This mode determines whether or not the terminal transmits attributes as well as screen data in response to ESC 5 (section 11.1). In response to ESC 6, the terminal transmits the same as if page dump mode were enabled.

Enable	CSI ? 1 2 h	Terminal sends all line attributes, character generation select commands, and video attributes necessary to completely regenerate the current display.
Disable	CSI ? 1 2 l	Terminal transmits only data characters.

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10.1. Cursor Positioning

The screen position where the next character will appear is indicated by the cursor, unless the cursor and a character are in the last position of the row and autowrap is on. The following sequences control cursor movement. The 7-bit sequence is on the left in blue, the 8-bit sequence is on the right. If only one sequence is given, it applies to both 7-bit and 8-bit operations.

Cursor Up

ESC [Pn A CSI Pn A

The cursor up sequence moves the cursor up Pn lines in the same column, stopping at the top margin.

> **NOTE:**
>
> For the cursor position sequences, if Pn = 0, the cursor is moved one position (line or column), depending on the sequence.

Cursor Down

ESC [Pn B CSI Pn B

The cursor down sequence moves the cursor down Pn lines in the same column, stopping at the bottom margin.

Cursor Positioning

Cursor Backward

ESC [Pn D CSI Pn D

The cursor backward sequence moves the cursor left Pn columns, stopping at the left margin.

Cursor Forward

ESC [Pn C CSI Pn C

The cursor forward sequence moves the cursor right Pn columns, stopping at the right margin.

Cursor Position

ESC [H CSI H

This position sequence moves the cursor to home position (line 1, column 1).

ESC [Pl ; Pc H CSI Pl ; Pc H

This sequence moves the cursor to line Pl, column Pc. The numbering of lines depends on the state (origin or absolute) of the origin mode (section 9.4).

Horizontal and Vertical Position

ESC [Pl ; Pc f CSI Pl ; Pc f

This sequence functions the same as the cursor position sequence, which should be used wherever possible.

Index

ESC D IND

The index sequence moves the cursor down one line in the same column. If the cursor is at the bottom margin, the screen scrolls up.

Reverse Index

ESC M RI

The reverse index sequence moves the cursor up one line in the same column. If the cursor is at the top margin, the screen scrolls down.

Next Line

ESC E NEL

The next line sequence moves the cursor down to the first position on the next line. If the cursor is at the bottom margin, the screen scrolls up.

Cursor Positioning

Save Cursor

ESC 7

This sequence causes the following information to be saved in terminal NVR memory:

Cursor position
Graphic rendition
Character set shift state
State of wrap flag
State of origin mode
State of selective erase

Restore Cursor

ESC 8

This sequence restores the states saved through the save cursor sequence. If no characteristics are saved, the cursor moves to home position, origin mode is reset, no character attributes are assigned, and the default character set mapping is established.

10.2. Tab Stops

Horizontal tab stops can be set by the host or the operator. When the terminal receives a horizontal tab code (HT), the cursor advances (tabs) to the next tab stop. If there are no more tab stops on that line, the cursor stops at the right margin.

The tab set and tab clear sequences are ignored if the operator has selected "User Features Locked" on the general set-up screen (section 3.6).

Horizontal Tabulation Set

ESC H	HTS

This sequence sets one horizontal tab stop at the current column.

Tabulation Clear

ESC [g	CSI g
ESC [0 g	CSI 0 g

These sequences clear the horizontal tab stop at the cursor position.

ESC [3 g	CSI 3 g

This sequence clears all horizontal tab stops.

10.3. Character Rendition and Attributes

Character rendition and attributes affect the way a character is displayed. A separate character attribute designates whether or not characters are erasable by the selective erase sequences (selective erase in line or display, section 10.6), which erase characters but not attributes.

Select Graphic Rendition

ESC [Ps ; Ps m CSI Ps ; Ps m

This sequence can be used to select one or more character renditions (attributes). The character attributes (defined in Table 10–1) are represented by Ps. If more than one parameter is specified, each Ps is separated by the delimiter (semicolon); otherwise, the delimiter is omitted.

For all subsequent characters received by the terminal, the selected attributes remain in effect until a new select graphic rendition sequence is received.

Multiple parameters are executed in sequence. The effects are cumulative. For example, to change from underlined to blinking and bold, use:

ESC [0 ; 1 ; 5 m

Table 10–1. Graphic Rendition Parameters

Parameter (Ps)	Action
0	All attributes off
1	Display bold
4	Display underlined
5	Display blinking
7	Display reverse character
2 2	Display normal intensity
2 4	Display not underlined
2 5	Display not blinking
2 7	Display normal character

Selective Erase Attribute

(VT200 mode only)

The selective erase attribute provides a way to erase characters without erasing the display attributes set by the select graphic rendition sequence. For example, characters entered in an underlined field can be erased without erasing the underline.

ESC [" q	CSI " q
ESC [0 " q	CSI 0 " q
ESC [2 " q	CSI 2 " q

These sequences designate the character as erasable by a selective erase in display or selective erase in line sequence (section 10.6).

ESC [1 " q	CSI 1 " q

The character is not erasable by a selective erase in display or line sequence.

10.4. Line Attributes

Video line attributes apply to a complete display line. The line affected by the attribute is the one containing the cursor. When the attribute changes, the cursor stays in the same character position, unless the new attribute moves the cursor past the right margin. The attribute moves with the line when lines on the screen scroll.

Double-Height Line

ESC # 3 (top half)
ESC # 4 (bottom half)

These sequences are used to convert the line containing the cursor into the top or bottom half of a double-height, double-width line. The sequences must be used in pairs on adjacent lines. The same character must be sent to both lines to form a full character.

The maximum number of characters per line is halved. If the line was previously single-width, single-height, all characters beyond column 40 (or 66) are lost.

Double-Width Line

ESC # 6

This makes the line with the cursor double-width, single-height. The maximum number of characters per line is halved. If the line was previously single-width, single-height, all characters beyond column 40 (or 66) are lost.

Single-Width Line

ESC # 5

This sequence converts the line containing the cursor to single-width, single-height. This is the default condition for all new lines on the screen.

NOTE:

If you erase an entire line using the erase in display sequence, the line attribute changes to single-height and single-width.

10.5. Editing

Editing sequences are used to insert and delete characters and lines of characters at the cursor position. When lines are inserted or deleted, the cursor position does not change.

NOTE:

Pn is a numeric parameter. The terminal sets the value to one line or column if the parameter is omitted or is zero.

Insert Line

ESC [Pn L CSI Pn L

This sequence inserts Pn lines at the cursor location. If fewer than Pn lines remain from the current line to the end of the scrolling region, the number of remaining lines is inserted. Lines contained in the scrolling region at and below the cursor move down. Lines are lost if they are moved past the bottom margin.

The cursor is reset to column 1. When the cursor is outside the scrolling region, this sequence is ignored.

ESC [Pn M CSI Pn M

This sequence deletes Pn lines starting at the line with the cursor. If fewer than Pn lines remain from the current line to the end of the scrolling region, the number of remaining lines is deleted. Lines within the scrolling region and below the cursor move up. Blank lines are added at the bottom of the scrolling region as lines are deleted.

The cursor is reset to column 1. When the cursor is outside the scrolling region, this sequence is ignored.

Insert Character

ESC [Pn @ CSI Pn @

This sequence inserts Pn blank characters at the cursor position, with the character attributes set to normal. Characters on the line are shifted right. The cursor does not move. If Pn is 0, one blank character is inserted.

Delete Character

ESC [Pn P CSI Pn P

This sequence deletes Pn characters beginning with the character at the cursor position. All characters to the right of the cursor move to the left, creating a space character at the right margin for each character deleted. Character attributes move with the characters. All character attributes are off for the spaces created at the end of the line.

10.6. Erasing

If a character is erased, its character attributes are also lost. Erasing characters or lines does not change the position of the cursor.

Erase Character

ESC [Pn X

CSI Pn X

This sequence erases Pn characters beginning at the cursor position. Character attributes are set to normal. Data on the line is not reformatted. The position of the cursor remains the same.

Erase in Display

Erase in display sequences erase some or all of the characters in the display. Any completely erased line returns to the single-width, single-height line attribute.

ESC [J
ESC [0 J

CSI J
CSI 0 J

These sequences erase from the cursor to the end of the screen, including the cursor position.

ESC [1 J

CSI 1 J

This sequence erases from the start of the screen through the cursor position.

ESC [2 J

CSI 2 J

This sequence erases all of the display. All lines are erased and changed to single-width. The cursor does not move.

Erase in Line

The erase in line sequences erase some or all of the characters in the line containing the cursor.

ESC [K	CSI K
ESC [0 K	CSI 0 K

These sequences erase from the cursor to the end of the line, including the cursor position. The line attribute is not affected.

ESC [1 K	CSI 1 K

This sequence erases from the start of the line through the cursor position. The line attribute is not affected.

ESC [2 K	CSI 2 K

This sequence erases the whole line.

Selective Erase in Line

(VT200 mode only)

Selective erase in line sequences erase only characters in the designated area which are specified as erasable by the selective erase attribute (section 10.3). Video line or character attributes (select graphic rendition, section 10.3) and nonerasable characters are not affected.

ESC [? K	CSI ? K
ESC [? 0 K	CSI ? 0 K

This sequence erases all erasable characters from the cursor to the end of the line.

ESC [? 1 K	CSI ? 1 K

This sequence erases all erasable characters from the beginning of the line through the cursor position.

ESC [? 2 K	CSI ? 2 K

This sequence erases all erasable characters on the line.

Selective Erase in Display

(VT200 mode only)

Selective erase in display sequences erase only characters in the designated area which are specified as erasable by the selective erase attribute (section 10.3). Video line or character attributes (select graphic rendition, section 10.3) and nonerasable characters are not affected.

ESC [? J	CSI ? J
ESC [? 0 J	CSI ? 0 J

This sequence erases all erasable characters from and including the cursor position to the end of the screen.

ESC [? 1 J	CSI ? 1 J

This sequence erases all erasable characters from the beginning of the screen through the cursor position.

ESC [? 2 J	CSI ? 2 J

This sequence erases all erasable characters on the entire display.

10.7. Scrolling Margins

The area of the screen that can receive new characters by scrolling old characters off the screen is the scrolling region. The area is defined by setting the top and bottom margins.

Set Top and Bottom Margins

ESC [Pt ; Pb r

CSI Pt ; Pb r

This sequence sets the top and bottom margins to define the scrolling region. Pt is the line number of the first line in the scrolling region, and Pb is the line number of the bottom line. Lines are counted from 1 (the top of the screen).

The default is the entire screen (no margins). Pt or Pb, if omitted, defaults to the top or bottom lines, respectively. Since the minimum size of the scrolling region is two lines, the top margin must be less than the bottom margin.

NOTE:

Power-on or reset causes the scrolling region to be the entire screen.

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Chapter 11. Miscellaneous Commands

11.1. Host-Solicited Inputs

Host-solicited inputs include transmit enable commands and reports, as explained in the following paragraphs.

Transmit Enable Commands

Enable Transmission

ESC 5

The terminal transmits either characters and attributes or characters only to the host according to the current page dump mode (section 9.5).

Enable Page Dump Transmission

ESC 6

For one transmit only, this command forces the terminal to transmit as if page dump mode (section 9.5) were enabled. The setting of page dump mode is not affected.

Reports

In response to requests from the host, the terminal transmits reports to provide identification (type of terminal), cursor position, and terminal operating status.

Host-Solicited Inputs

Device Attributes (DA) Primary Request

ESC [c	CSI c
ESC [0 c	CSI 0 c

By sending the DA control sequence with either no parameter or a parameter of 0, the host requests the SVT-1220 to identify itself. If the terminal is in VT52 mode, the terminal does not return a response.

If the terminal is in edit mode the SVT-1220, response is:

ESC [? 7c	(Edit mode)

If the terminal is not in edit mode but is in VT200 mode, the SVT-1220 response to the host request is:

ESC [? 6 2 ; 1 ; 2 ; 6 ; 7 ; 8 ; 9 c	(VT200 7-bit mode)
CSI ? 6 2 ; 1 ; 2 ; 6 ; 7 ; 8 ; 9 c	(VT200 8-bit mode)

If the terminal is not in edit mode but is in full VT100 mode, the terminal response is:

ESC [? 1 ; 2 c	(No printer)
ESC [? 1 ; 11 c	(Printer is ready or not ready)

If the terminal is not in edit mode but is in VT100 mode, the SVT-1220 response is determined by the terminal ID feature (general set-up screen, section 3.6):

ESC [? 1 ; 2 c	(VT100 ID)
ESC [? 1 ; 0 c	(VT101 ID)
ESC [? 6 c	(VT102 ID)
ESC [? 6 2 ; 1 ; 2 ; 6 ; 7 ; 8 ; 9 c	(VT220 ID)

Device Attributes (DA) Secondary Request

ESC [> c	CSI > c
ESC [> 0 c	CSI > 0 c

The host sends these sequences to request the SVT-1220 to further identify itself.

The SVT-1220 response is:

ESC [> 1 ; 2 0 ; 0 c	(VT200 7-bit or VT100 mode)
CSI > 1 ; 2 0 ; 0 c	(VT200 8-bit mode)
ESC [> 1 ; 2 0 ; 0 c	(Full VT100 mode)
No response	(VT52 mode)

Identify Terminal

ESC Z

This sequence is similar to a DA primary request sequence.

Terminal responses are the same as to a device attributes primary request, except that if the terminal is in VT52 mode, the response is:

ESC / Z	(VT52 mode)

Device Status Report — Terminal

ESC [5 n CSI 5 n

This sequence from the host requests the terminal to report status using a device status report sequence.

ESC [0 n CSI 0 n

This sequence from the terminal is sent in response to a host status request. It means no malfunctions were detected and the terminal is ready.

ESC [3 n CSI 3 n

This sequence from the terminal is sent in response to a host status request. It means malfunctions were detected; the host should retry the status request.

Device Status Report — Keyboard Type

ESC [? 2 6 n CSI ? 2 6 n

This sequence from the host requests the terminal to report the keyboard type.

ESC [? 2 7 ; Pn n CSI ? 2 7 ; Pn n

This sequence from the terminal reports the keyboard type, where Pn is:

0 = Keyboard type unknown	8 = Dutch
1 = North American	9 = Italian
2 = British	10 = Swiss (French)
3 = Flemish	11 = Swiss (German)
4 = Canadian (French)	12 = Swedish
5 = Danish	13 = Norwegian
6 = Finnish	14 = French/Belgian
7 = German	15 = Spanish

Device Status Report — Printer

ESC [? 1 5 n CSI ? 1 5 n

This sequence from the host requests the SVT-1220 to report the status of the printer using a device status report sequence. SVT-1220 responses are:

ESC [? 1 0 n CSI ? 1 0 n

The printer is ready.

ESC [? 1 1 n CSI ? 1 1 n

The printer is not ready.

ESC [? 1 3 n CSI ? 1 3 n

There is no printer.

Device Status Report — User-Defined Keys

ESC [? 2 5 n CSI ? 2 5 n

This sequence from the host, used in conjunction with a downline-load of user-defined keys (section 8.5), requests the SVT-1220 to report the status of the user-defined keys. Status is determined by the lock key definitions feature (general set-up screen, section 3.6). SVT-1220 responses are:

ESC [? 2 0 n CSI ? 2 0 n

User-defined keys are unlocked.

ESC [? 2 1 n CSI ? 2 1 n

User-defined keys are locked.

Cursor Position Report

ESC [6 n CSI 6 n

This sequence from the host requests the terminal to report the cursor position using a cursor position report sequence. SVT-1220 response is:

ESC [Pl ; Pc R CSI Pl ; Pc R

Pl is the current line number; Pc is the current column number.

Report Terminal Parameters — Unsolicited

(Full VT100 mode only)

ESC [x	CSI x
ESC [0 x	CSI 0 x

This sequence from the host allows the terminal to send unsolicited reports when the set-up screens are exited. Terminal response is:

ESC [2 Ps x	CSI 2 Ps x

Ps is a report of the terminal parameters listed in Table 11–1.

Report Terminal Parameters — Solicited

(Full VT100 mode only)

ESC [1 x	CSI 1 x

This sequence from the host indicates that the terminal can report terminal parameters only when requested by the host. Terminal response is:

ESC [3 Ps x	CSI 3 Ps x

Ps is a report of the terminal parameters listed in Table 11–1.

Table 11–1. Terminal Parameters

Parameter	Value	Meaning
Parity	1 4 5	No parity set Parity is set and odd Parity is set and even
# of Bits	1 2	8 bits per character 7 bits per character
Transmit/ Receive Speed	8 16 32 48 56 64 88 104 112 120	75 110 150 300 600 1200 2400 4800 9600 19200 } bits per second
Multiplier	1	Bit rate multiplier = 16
Flags	0	Always zero

11.2. Terminal Reset

The terminal supports two types of reset sequences: a soft reset which puts the terminal in a predefined operating state, and a reset to initial state, which recalls terminal settings from NVR.

Soft Reset

A soft reset sets the terminal to the states listed in Table 11–2. A soft reset ignores the settings in NVR and changes the current (temporary) state of features to those shown in Table 11–2.

Table 11–2. Soft Reset States

Sequence	State
Text Cursor*	On
Insert/Replace	Replace
Origin Mode	Absolute
Autowrap*	Off
Keyboard Action	Unlocked
Keypad Mode	Numeric
Cursor Key Mode	Normal
Top Margin	1
Bottom Margin	24
Character Sets	In multinational mode, terminal defaults to multinational character set in GL and GR. In national mode, terminal defaults to the character set that corresponds to the keyboard type feature. See section 6.2 for details.
Video Character Attributes	Normal
Selective Erase Attributes	Normal (erasable by selective erase in line and display commands, section 10.6).
Save Cursor State	Nothing is saved, so a subsequent restore cursor sequence restores the states as described in section 10.1.

* The current set-up feature setting is changed, but not the NVR (permanent) setting.

Terminal Reset

The following conditions cause a soft reset:

- Terminal operator selects "Reset Terminal" on the set-up directory screen (section 3.4)
- Host sends a select terminal type command (section 5.3), which causes a soft reset and other actions
- Host sends a soft reset sequence

The soft reset sequence is implemented only when the terminal is in a VT200 mode; otherwise, the sequence is ignored. The sequence is:

ESC [! p	CSI ! p

Reset to Initial State

A reset to initial state (also called a hard terminal reset) causes an NVR recall, with all current set-up values being replaced by their NVR values, or by power-up default values if NVR values do not exist. If NVR settings are not correct, host communications will be disrupted when the reset is performed.

In addition, a reset to initial state does the following:

- Disconnects the communications line
- Clears user-defined keys (if "Save User-Defined Keys" is not selected for the user key definitions feature, general set-up screen, section 3.6)
- Sets character sets to defaults, clearing any user-defined character set
- Erases the screen and returns the cursor to home position
- Sets the select graphic rendition state to all attributes off
- Sets subsequent characters to be nonselective erasable

The terminal performs a reset to initial state when power is turned on, the operator selects the "Recall" function on the set-up directory screen (section 3.4), or the host sends the following escape sequence:

ESC c

ESC c is accepted in any mode.

11.3. Tests and Adjustments

Terminal tests and alignment patterns can be initiated from the keyboard or the host computer via control sequences. These procedures are usually performed only by Sperry field service personnel.

Perform Confidence Test

ESC [4 ; Ps ; . . . Ps y CSI 4 ; Ps ; . . . Ps y

Each Ps is a parameter indicating a test to be performed; the tests and parameter codes are listed in Table 11–3. Several tests can be invoked at one time by listing the parameters, separated by semicolons. The tests are not necessarily executed in the order in which they are entered.

Table 11–3. Confidence Test Parameters

Parameter	Meaning
0	Run tests 1, 2, 3, and 6
1	Run test 1: power-on self-test
2	Run test 2: MAIN port data loopback test
3	Run test 3: AUX port loopback test
4	Not used
5	Not used
6	Run test 6: MAIN port modem control line loopback test
7	Not used
8	Not used
9	Repeat any selected test continuously until power off or failure

Screen Alignment Display

ESC # 8

This command fills the entire screen with uppercase E's for screen focus and alignment. This command is used by Sperry field service personnel.

Chapter 12. Printing

12.1. Print Commands 12–1

Autoprint Mode 12–1
Printer Controller Mode 12–2
Print Cursor Line 12–2
Print Screen 12–2
Hard Copy Print 12–3

12.2. Printer Communications 12–3

Chapter 12. Printing

12.1. Print Commands

Print operations are selected through control sequences from the host. Terminal and printer tab stops are ignored when characters are printed on the screen. Print characters are spaced with the space (SP) character. After the last printable character of a line (not a space character), the terminal transmits a carriage return (CR) and line feed (LF), vertical tab (VT), or form feed (FF). Spaces which have video attributes are printable characters.

The printer device status report (section 11.1) should be used to check printer status before sending a print sequence.

Autoprint Mode

ESC [? 5 i CSI ? 5 i

This sequence turns on autoprint mode. When the cursor leaves the current line because of a line feed, form feed, vertical tab, or autowrap, subsequent display lines are printed. CR and the character which moved the cursor off the previous line (LF, FF, or VT) terminate the printed line. Autowrap lines end with LF.

ESC [? 4 i CSI ? 4 i

This sequence turns off autoprint mode.

Print Commands

Printer Controller Mode

ESC [5 i CSI 5 i

This sequence turns on printer controller mode. Received characters are transmitted to the printer without being displayed on the screen. The terminal sends all characters and sequences except NUL, XON, XOFF, CSI 5 i, and CSI 4 i. Spaces are not inserted or deleted, and line delimiters are not provided. The terminal does not select the correct printer character set.

Printer controller mode has higher priority than auto print mode and can be selected during auto print mode. Keyboard activity is directed to the host in printer controller mode.

ESC [4 i CSI 4 i

This sequence turns off printer controller mode.

Print Cursor Line

ESC [? 1 i CSI ? 1 i

This sequence prints the display line containing the cursor. The cursor position does not change. When the line prints, the sequence is completed.

Print Screen

ESC [i CSI i
ESC [0 i CSI 0 i

This sequence prints the screen display (full screen or scrolling region, depending on the print extent selection, section 9.4). Print form feed mode (section 9.4) selects either a form feed (FF) or nothing as the print terminator. When the screen prints, the sequence is completed.

Hard Copy Print (Full VT100 mode only)

ESC # 7

When the terminal receives this sequence, it transmits an XOFF code to the host, locks the keyboard, and starts to transmit data to the printer. The data transmitted is from home position of the screen through the cursor position. When the data has been transmitted, the terminal sends an XON code to the host and unlocks the keyboard. The screen resumes normal operation when printing is completed.

12.2. Printer Communications

The SVT-1220 transmits data characters but not XON/XOFF to the printer. The terminal recognizes only XON/XOFF from the printer; any other characters are ignored.

When XOFF is received from the printer, the terminal stops sending data until it receives an XON or until "Clear Comm" is selected on the set-up directory screen (section 3.4).

The AUX bit/parity feature determines whether 8-bit C1 control characters or their 7-bit equivalents (Table 6–6) are sent to the printer. This feature setting must match the printer.

Chapter 13. Communications

13.1. Communications Protocol 13–1

13.2. Modem Connection 13–3

13.3. Edit Mode Transmission 13–4

Chapter 13. Communications

This chapter describes the transmission protocol followed by the SVT-1220 when communicating with a host system. Appendix C defines host connector pin assignments.

13.1. Communications Protocol

The SVT-1220 can operate at transmission speeds up to 19200 baud. However, the terminal may not be able to keep up with incoming data from the host. The terminal stores incoming characters in a character input buffer, processing the characters on a first-in/first-out basis. The size of the buffer is 254 characters.

To prevent data loss, the SVT-1220 synchronizes the data flow with XON/XOFF protocol. The terminal sends the host an XOFF control character when the input buffer fills to 64 or 128 characters, if selected by the XOFF feature (section 3.7). If the host fails to stop transmitting characters, the terminal sends a second XOFF when the buffer fills to 220 characters and again when the buffer is completely full.

The SVT-1220 transmits an XON control character to the host when the buffer contains fewer than 32 characters. The host may then resume sending characters to the terminal without any loss of data.

NOTE:

If the user selects "No XOFF," the terminal will not send XOFF to the host when the 64 or 128, 220, and full limits are reached. Also, the HOLD SCREEN key is disabled. When XOFF is disabled, data may be lost. Buffer overflow is displayed as a reverse question mark (ʕ) on the screen.

Communications Protocol

The SVT-1220 recognizes XON/XOFF from the host when XOFF is enabled. When XOFF is received, the terminal stops sending characters to the host until XON is received. The only exception is the transmission of XON and XOFF from the terminal.

When XOFF is selected, the SVT-1220 transmits an XOFF to the host when any of the following conditions exist:

- The input buffer reaches the first XOFF point of 64 or 128 characters.
- The input buffer reaches the second XOFF point of 220 characters.
- The input buffer reaches the maximum limit of 254 characters.

The SVT-1220 transmits an XON to the host when any of the following conditions exist:

- The input buffer reaches 32 characters and the last control character sent was an XOFF.
- The self-test is completed.
- "Clear Comm" is selected on the set-up directory screen.
- "Recall" is selected on the set-up directory screen.
- The HOLD SCREEN key is pressed to unlock the screen, and the input buffer is at or below 32 characters.

If the host does not support XON/XOFF, fill characters may be used by the host application software to allow use of all terminal features. Fill characters may not be required if the application software does not use an excessive number of control characters, the AUX port, smooth scroll, or split screen, and the baud rate is limited to 9600 or less.

13.2. Modem Connection

The SVT-1220 performs the following actions when a connection is made to a host via a modem:

- Clears any transmission in progress.
- Clears all message buffers.
- Clears the keyboard buffer.
- Clears the input buffer.
- Clears XOFFs sent or received.
- If the keyboard was locked, it is unlocked.

In addition, if the terminal is set for auto-answerback (section 3.9), the SVT-1220 automatically sends a message to the host when connection to the host is completed.

The SVT-1220 disconnects from the host when one of the following conditions occurs:

- The SHIFT BREAK key is pressed.
- "Recall" or "Default" is selected on the set-up directory screen.
- The data set ready (DSR) signal is lost.
- The self-test command is received from the host.
- The carrier detect (CD) signal is lost for the length of time specified by the modem disconnect feature (section 3.7).
- CD is lost within 30 seconds of DSR.

The SVT-1220 is normally disconnected from the host by pressing the SHIFT BREAK key. Host response to the disconnect signal from the terminal is dependent on the host and the application software.

13.3. Edit Mode Transmission

SVT-1220 edit mode and related features can be selected either by the operator (section 3.11) or by the host (section 9.5). Edit mode affects only host communications through the MAIN connector.

In edit mode, all keystrokes are sent directly to the screen, and are not sent to the host until the operator presses the ENTER key. Refer to section 4.3 for information on operator options while in edit mode.

In edit mode, as soon as the operator presses the ENTER key, the keyboard is locked, the Wait indicator lights, and "Main Send" is displayed in the communications mode field of the set-up directory screen (section 3.4). If the terminal is set for "Immediate Transmission" (transmit execution feature, enhancements set-up screen), (section 3.11), the data is transmitted immediately. If the terminal is set for "Deferred Transmission," the terminal sends the host a transmission request (ESC S) and does not transmit data until the host returns a solicitation code (ESC 5 or ESC 6, section 11.1).

Data blocks are transmitted with an STX prefix and an ETX suffix to delineate the data. The transmission includes all data on the screen, including line and visual attribute commands. All lines are terminated with CR LF, so data transmitted from the terminal can be retransmitted to the terminal and produce the same format.

If the area of data to be transmitted is a block (less than the full screen), the transmission begins with home position or the last block marker. The last block marker is a nondisplayed marker placed at the cursor location when the ENTER key is pressed to initiate data transmission. Each time a transmission occurs, the last block marker is updated. The last block marker is cleared only by a terminal reset command or by the sequence ESC [2 J.

Appendixes

Appendix A. National Keyboards

Appendix B. Using National Keyboards

Appendix C. Interfaces

Appendix D. SVT-1220 Specifications

Appendix E. VT52 Mode Control Sequences

Appendix A.
SVT–1220 National Keyboards

Figure A–1. North American Keyboard
Figure A–2. British Keyboard
Figure A–3. Flemish Keyboard
Figure A–4. Canadian (French) Keyboard
Figure A–5. Danish Keyboard
Figure A–6. Finnish Keyboard
Figure A–7. German Keyboard
Figure A–8. Dutch Keyboard
Figure A–9. Italian Keyboard
Figure A–10. Swiss (French) Keyboard
Figure A–11. Swiss (German) Keyboard
Figure A–12. Swedish Keyboard
Figure A–13. Norwegian Keyboard
Figure A–14. French/Belgian Keyboard
Figure A–15. Spanish Keyboard

North American and British Keyboards

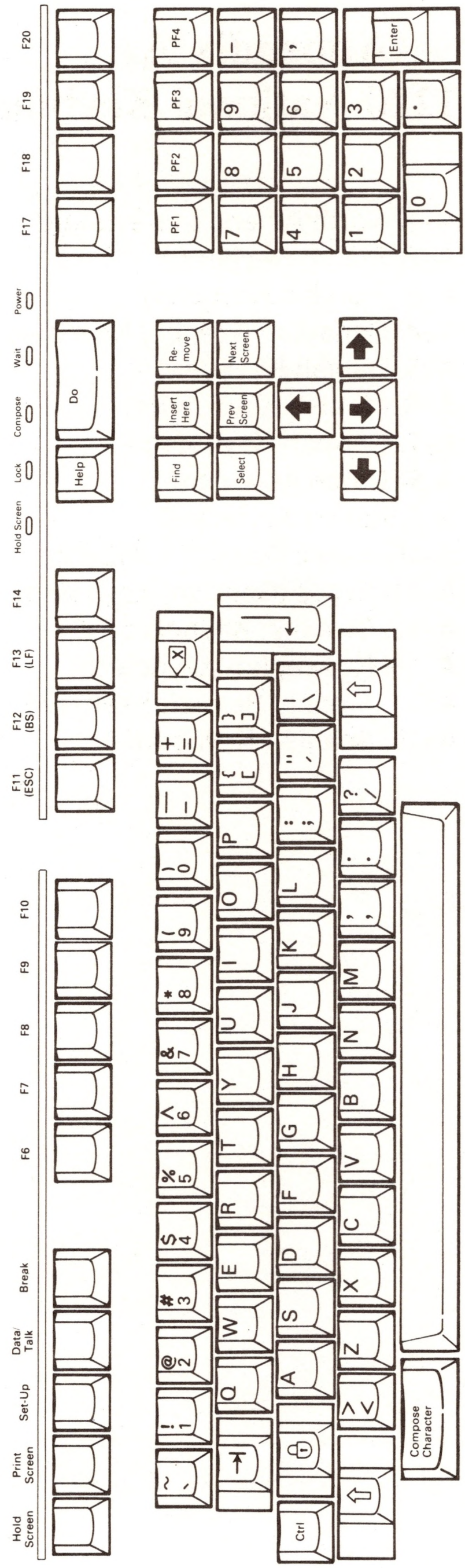


Figure A–1. North American Keyboard

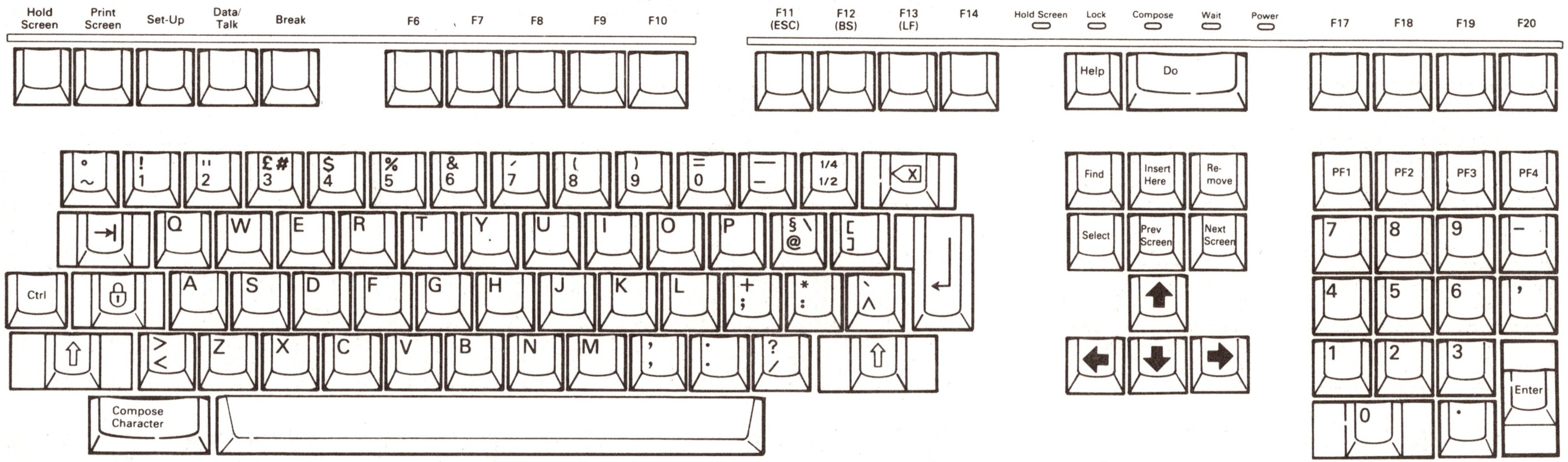


Figure A–2. British Keyboard

APPENDIX A

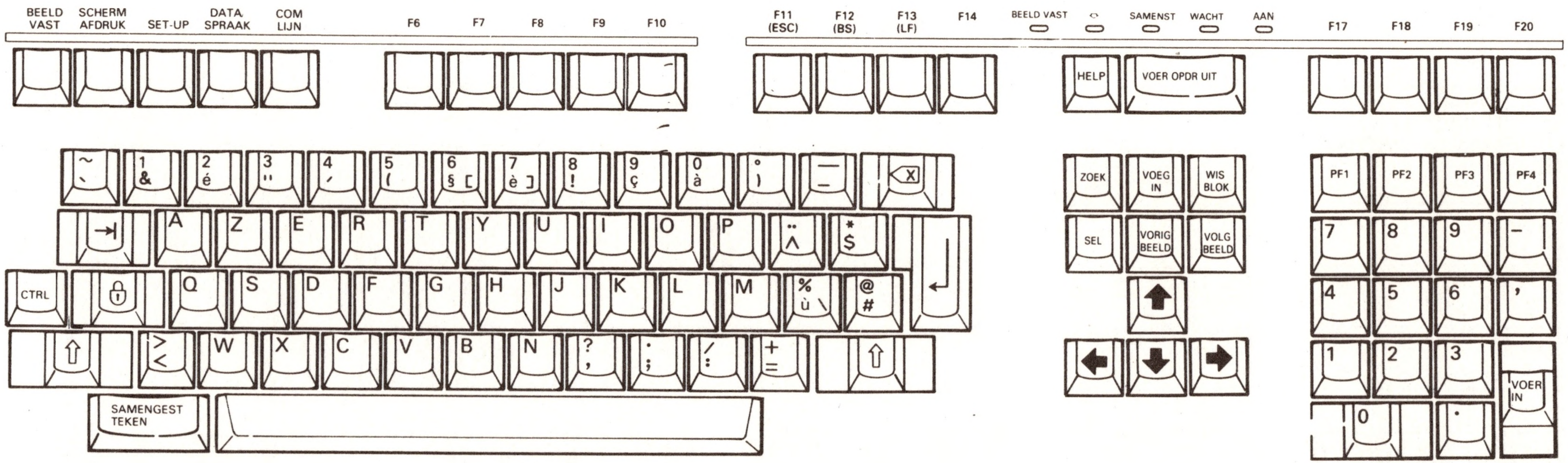


Figure A–3. Flemish Keyboard

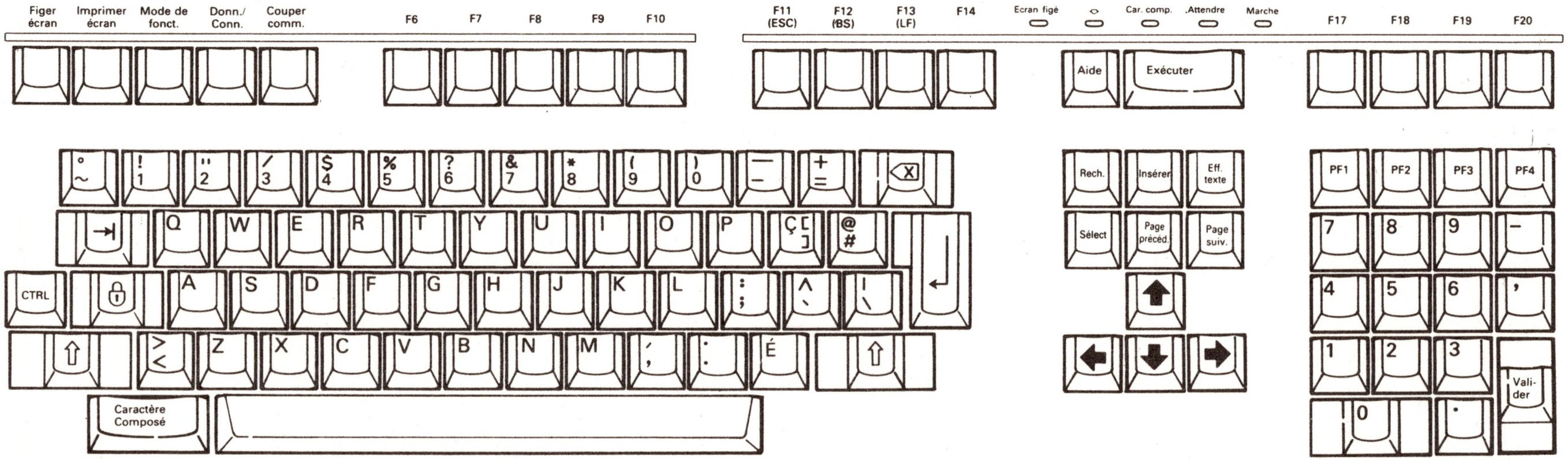


Figure A–4. Canadian (French) Keyboard

APPENDIX A

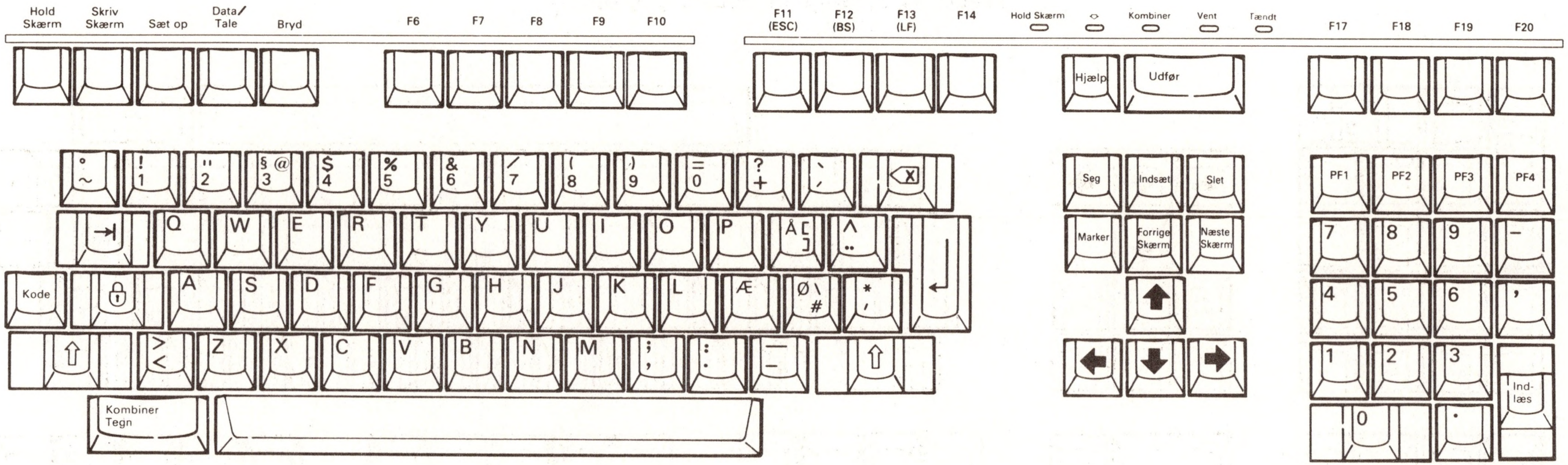


Figure A–5. Danish Keyboard

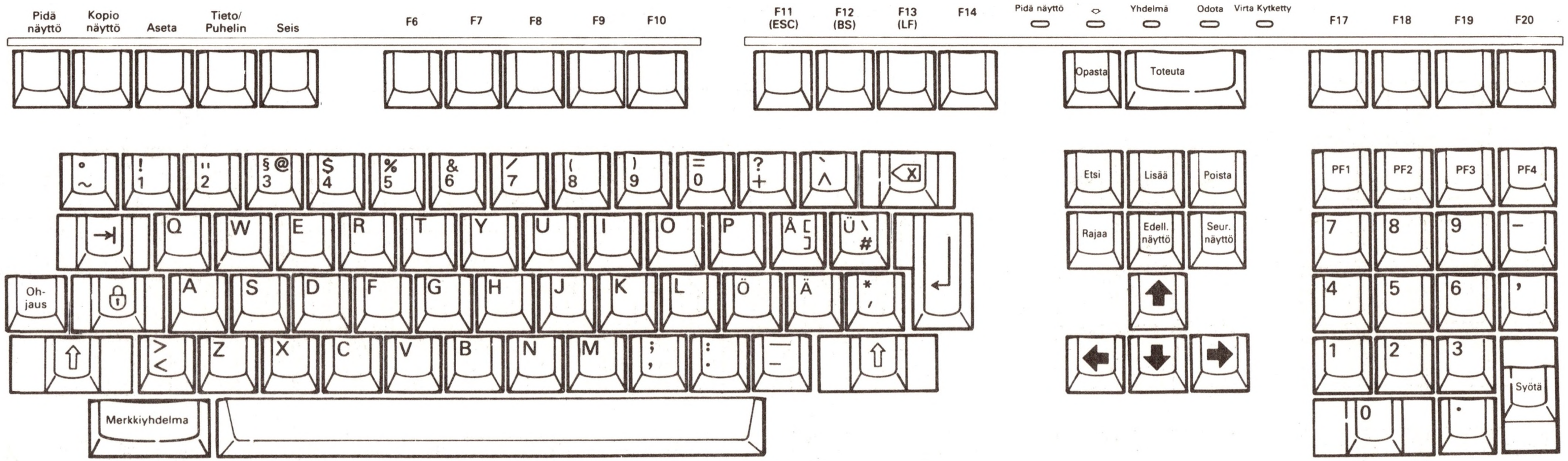


Figure A–6. Finnish Keyboard

APPENDIX A

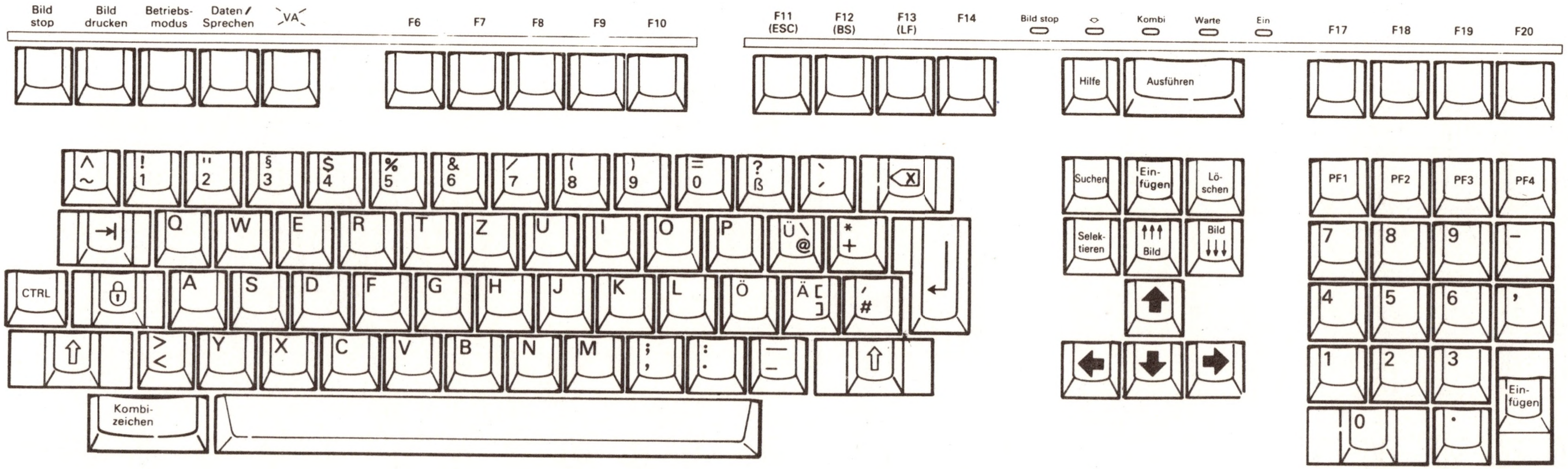


Figure A–7. German Keyboard

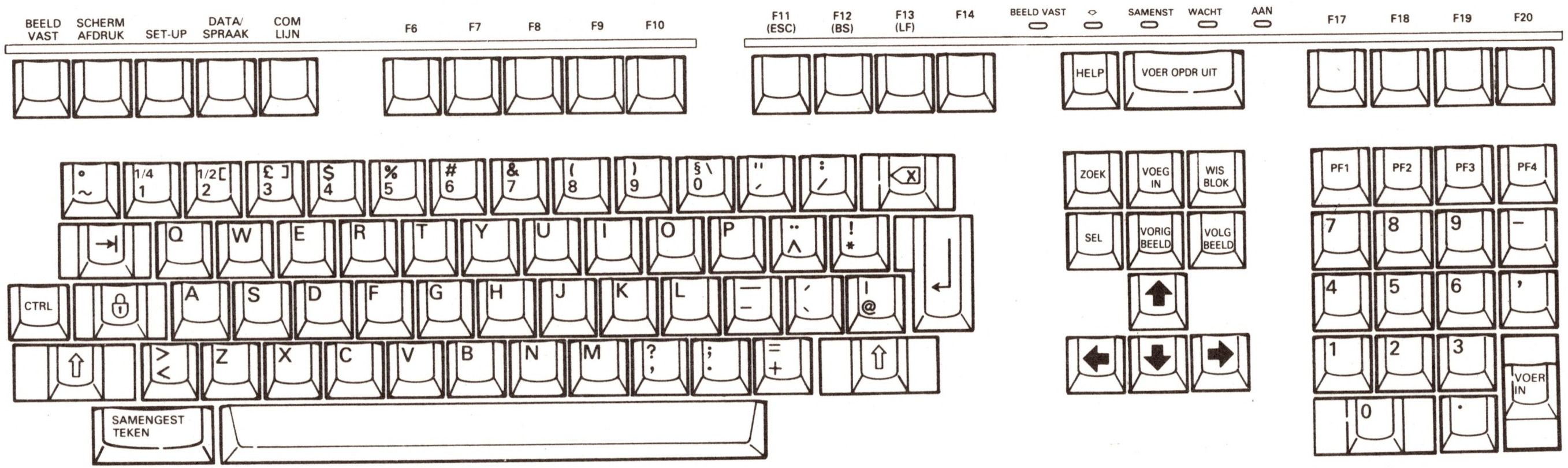


Figure A–8. Dutch Keyboard

APPENDIX A

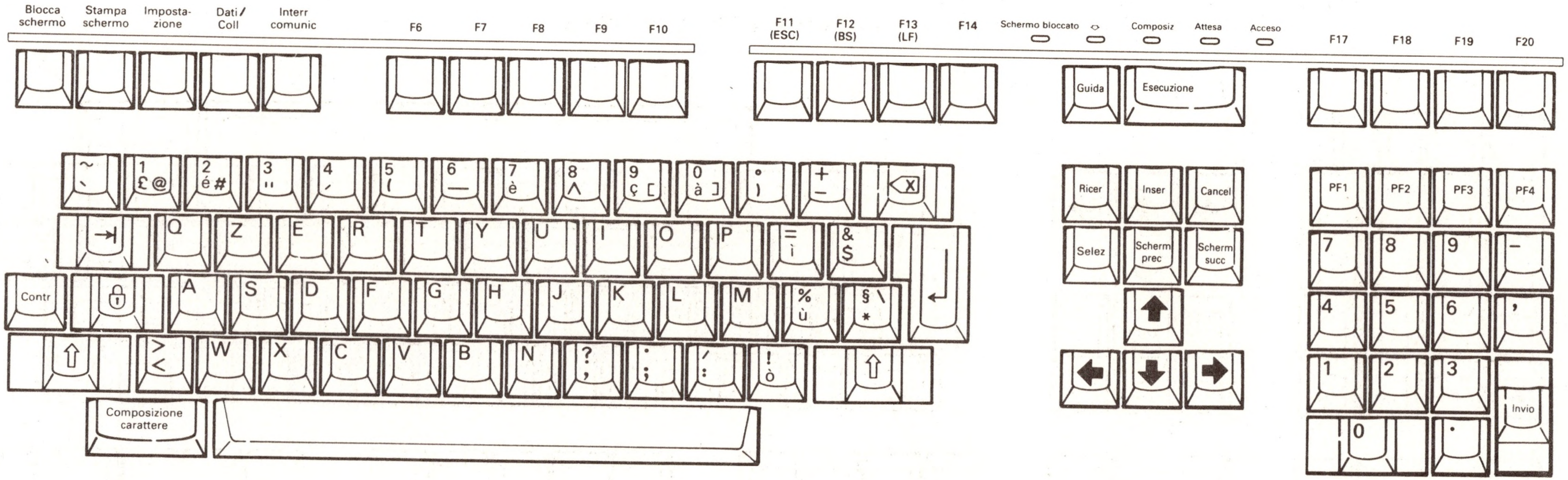


Figure A–9. Italian Keyboard

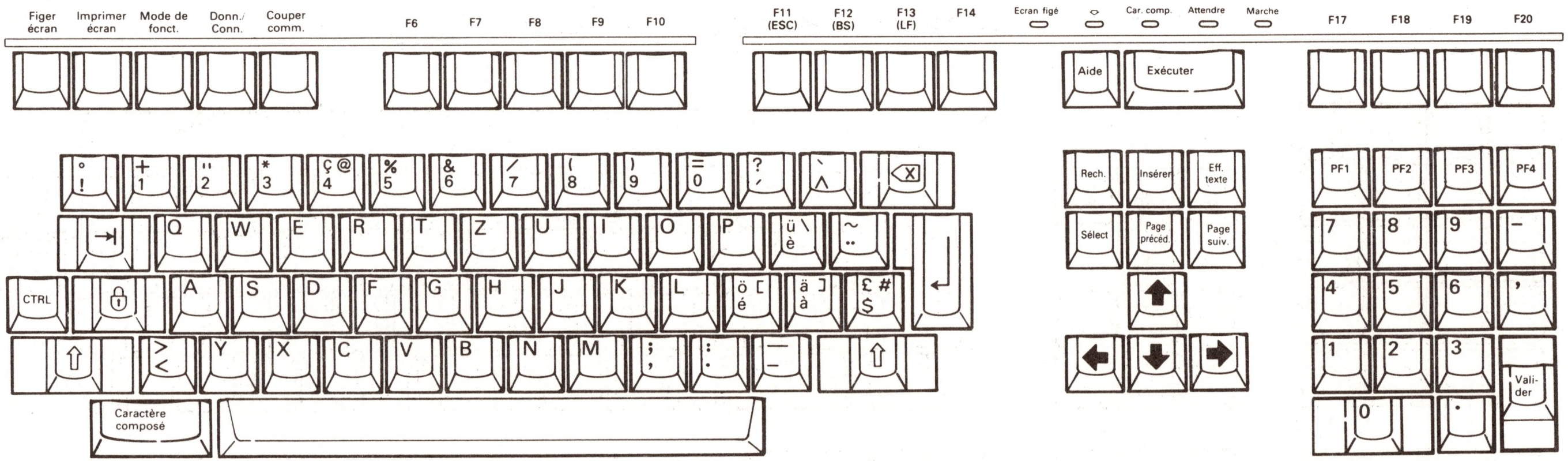


Figure A–10. Swiss (French) Keyboard

APPENDIX A

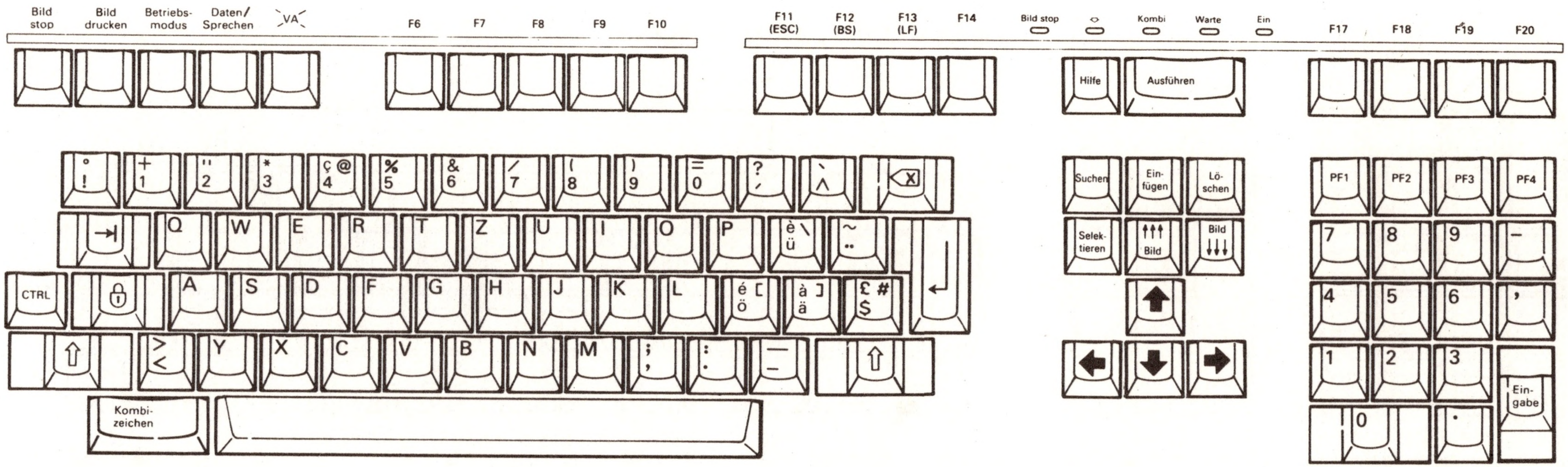


Figure A–11. Swiss (German) Keyboard

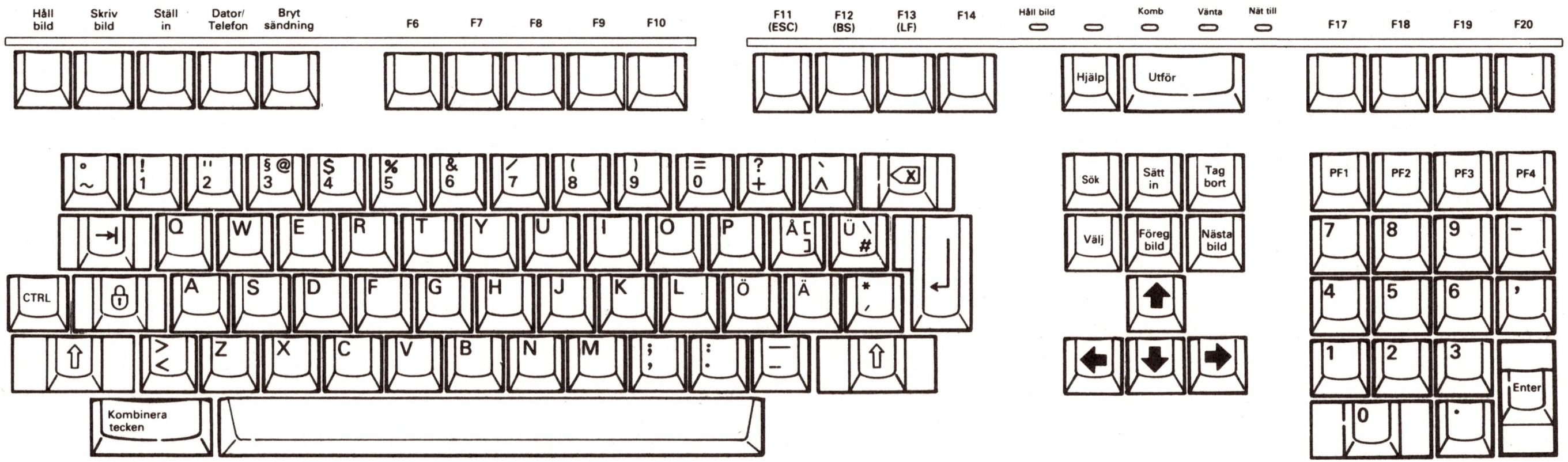


Figure A–12. Swedish Keyboard

APPENDIX A

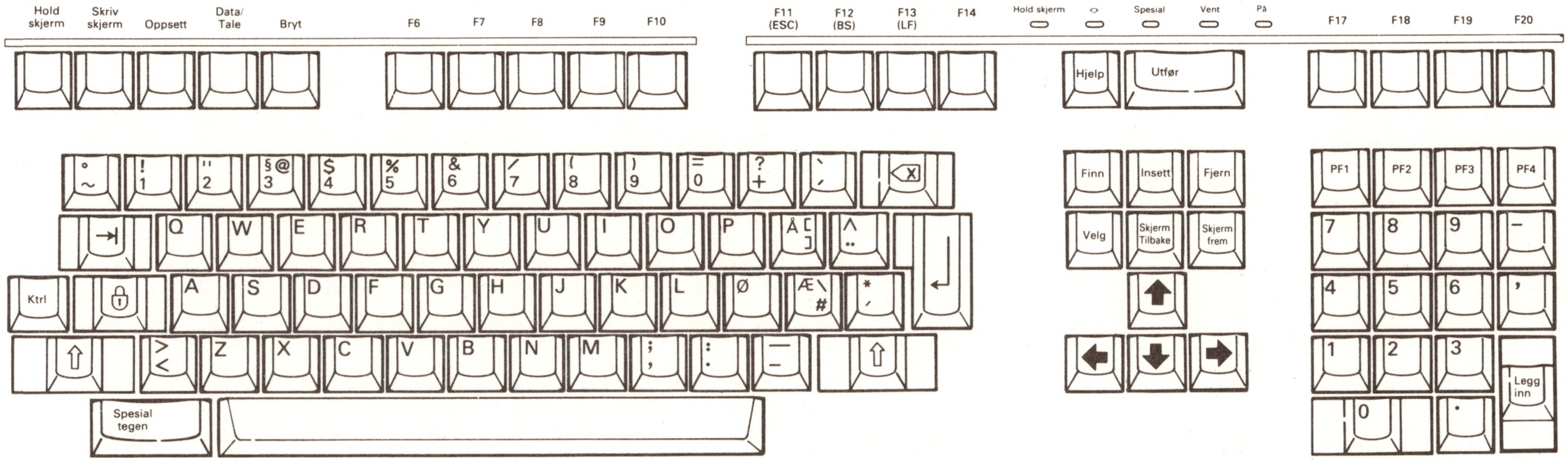


Figure A–13. Norwegian Keyboard

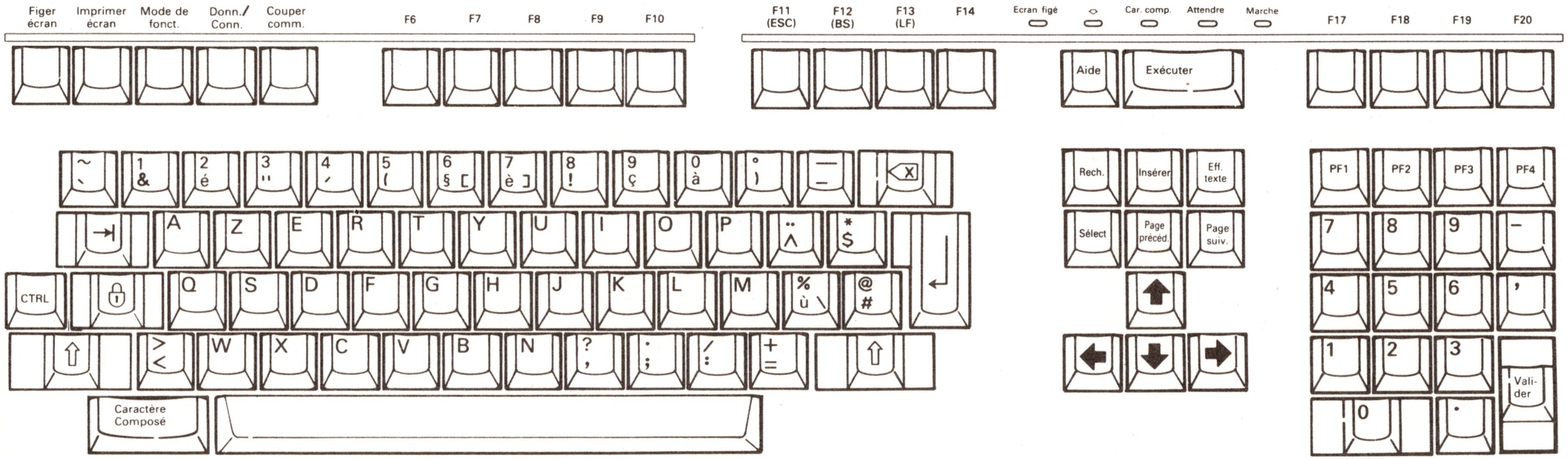


Figure A–14. French/Belgian Keyboard

APPENDIX A

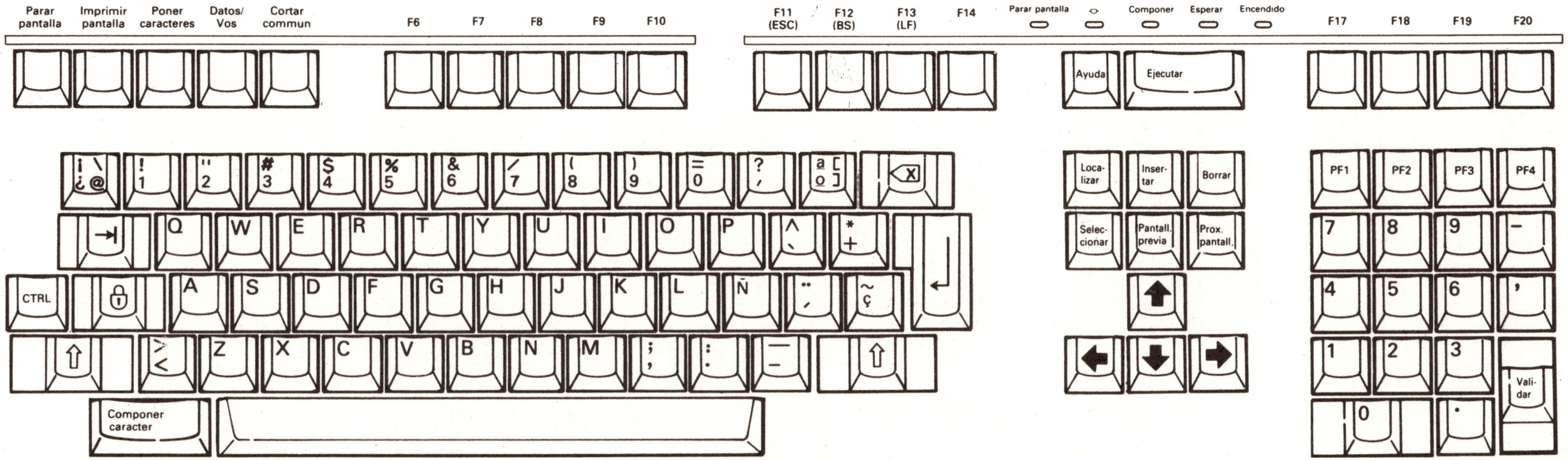


Figure A–15. Spanish Keyboard

Appendix B.
Using National Keyboards

Table B–1. British National Character Set
Table B–2. British Keyboard Compose Character Sequences
Table B–3. Dutch National Character Set
Table B–4. Dutch Keyboard Compose Character Sequences
Table B–5. Finnish National Character Set
Table B–6. Finnish Keyboard Compose Character Sequences
Table B–7. French National Character Set
Table B–8. Flemish Keyboard Compose Character Sequences
Table B–9. French/Belgian Keyboard Compose Character Sequences
Table B–10. Canadian (French) National Character Set
Table B–11. Canadian (French) Keyboard Compose Character Sequences
Table B–12. German National Character Set
Table B–13. German Keyboard Compose Character Sequences
Table B–14. Italian National Character Set
Table B–15. Italian Keyboard Compose Character Sequences
Table B–16. Norwegian/Danish National Character Set
Table B–17. Danish Keyboard Compose Character Sequences
Table B–18. Norwegian Keyboard Compose Character Sequences
Table B–19. Spanish National Character Set
Table B–20. Spanish Keyboard Compose Character Sequences
Table B–21. Swedish National Character Set
Table B–22. Swedish Keyboard Compose Character Sequences
Table B–23. Swiss National Character Set
Table B–24. Swiss (French) Keyboard Compose Character Sequences
Table B–25. Swiss (German) Keyboard Compose Character Sequences
Table B–26. Shortcut Compose Method — Multinational Mode

The key positions assigned to the data characters vary among the 15 keyboards. On all keyboards, however, the function keys (the ones in white in Figure 2–1) perform in the same way.

B.1 Selecting Keyboard Type

The keyboard type feature on the set-up directory screen (section 3.4) is used to select the nationality of the displayed character set. Normally, the feature is set to match the nationality of the keycap labels. However, regardless of the nationality of the keycaps, any keyboard type can be selected, and the terminal then acts as if that keyboard type were present.

For example, if you have the North American keyboard but, through the keyboard type feature, you select the French Canadian keyboard, the terminal will display the characters shown in Figure A–4. If you select the Danish keyboard, the terminal displays the characters in Figure A–5, and so on. Thus, no matter what keyboard you have, you can make it work like any other language keyboard. Keep a copy of the keyboard layout handy so you know which keys produce which characters.

B.2. Keys With More Than Two Characters

On all keyboards except the North American keyboard, some keys contain more than two characters. On these keys there are characters on both the left and right halves of the key. For example, this key from the French Canadian keyboard can generate either the C cedilla (uppercase and lowercase) or the right and left brackets.



The data processing symbols feature on the keyboard set-up screen (section 3.9) determines which character is generated when you press the key. If the feature is set for "Typewriter Keys," the keys generate the characters shown on the left half of the keycaps (for example, uppercase or lowercase C cedilla). If the feature is set for "Data Processing Keys," the keys generate the characters shown on the right half (for example, the right and left brackets). Instead of changing the feature to enter a desired character, you may use a compose character sequence (when applicable) as shown in the tables in this appendix.

NOTE:

In national mode, the data processing symbols feature applies only to characters in the character set.

B.3. Selecting Character Sets

The character set feature (general set-up screen, section 3.6) determines the characters that can be generated from the keyboard. In multinational mode, you can generate any of the characters shown in Table 2–1. In national mode, you are restricted to the characters in the national character set that matches the keyboard you are using. The national character sets are shown in Tables B–1, B–3, B–5, B–7, B–10, B–12, B–14, B–16, B–19, B–21, and B–23.

In either mode, the number of displayable characters is greater than the number of keys on the keyboard. The additional characters are generated by compose character sequences.

Composing Characters

The SVT–1220 provides two ways to compose characters: the standard COMPOSE CHARACTER key method and a shortcut method which can be used for some alphabetical characters.

The COMPOSE CHARACTER key method functions as described in section 4.1. However, in national mode, each national character set supports a different set of sequences. These sequences are shown in the tables accompanying the corresponding character set tables in this appendix.

The shortcut method, which is not available on the North American keyboard, can be used only when the keyboard includes the diacritical mark which is part of the character to be generated. The diacritical marks are:

- ` (grave accent)
- ´ (acute accent)
- ^ (circumflex accent)
- ~ (tilde)
- ¨ (umlaut/diaeresis mark)

On all keyboards except the North American version, pressing a diacritical key does not generate the character. Instead, it starts the compose sequence, and lights the compose indicator. If the next keystroke is valid, the desired character will be displayed. Otherwise, the bell sounds and the compose process is aborted.

Multinational Mode

In multinational mode, all of the sequences described in section 4.1 work. In addition, the shortcut compose method can be used for the characters shown in Table B–26.

National Mode

In national mode, the only compose sequences available are the ones shown in the compose character sequences tables.

British National Character Set

Table B–1. British National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	@	120 80 50	P	140 96 60	`	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	£	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	[	153 107 6B	k	173 123 7B	{
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	\	154 108 6C	l	174 124 7C	|
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	]	155 109 6D	m	175 125 7D	}
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	n	176 126 7E	~
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	_	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	
DECIMAL	27	**ESC** CHARACTER
HEX	1B	

Appendix B. Using National Keyboards

Table B–2. British Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
£ (pound sign)	–l or –L or =l or =L	none
\ (backslash)	/<	none
}	) –	none
{	(–	none
|	/^	none

* Press the COMPOSE CHARACTER key before entering the sequence.

The British keyboard is shown in Figure A–2.

Dutch National Character Set

Table B–3. Dutch National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	¾	120 80 50	P	140 96 60	`	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	”	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	£	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	’	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	ij	153 107 6B	k	173 123 7B	▪
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	½	154 108 6C	l	174 124 7C	*f*
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	|	155 109 6D	m	175 125 7D	¼
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	n	176 126 7E	˙
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	—	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	ESC
DECIMAL	27	
HEX	1B	

CHARACTER

Appendix B. Using National Keyboards

Table B–4. Dutch Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
£ (pound sign)	– l or – L or =l or =L	none
¾ (three quarters)	3 4 (in this order)	none
ij (ij sign)	i j (in this order)	none
½ (one half)	1 2 (in this order)	none
f (Florin)	f – (in this order)	none

* Press the COMPOSE CHARACTER key before entering the sequence.

The Dutch keyboard is shown in Figure A–8.

NOTE:

Because of character size limitations, the terminal cannot display the characters *f*, ij, and ¾ on the screen. They are displayed respectively as f, ÿ, and ^{3}. The florin is represented to the host by f, not |. ·· is displayed as " and represented to the host by ".

Finnish National Character Set

Table B–5. Finnish National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	@	120 80 50	P	140 96 60	é	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	”	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	#	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	’	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	Ä	153 107 6B	k	173 123 7B	ä
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	Ö	154 108 6C	l	174 124 7C	ö
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	Å	155 109 6D	m	175 125 7D	å
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	Ü	156 110 6E	n	176 126 7E	ü
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	—	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	
DECIMAL	27	**ESC** CHARACTER
HEX	1B	

Appendix B. Using National Keyboards

Table B–6. Finnish Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
# (number sign)	+ +	none
@ (commercial at)	**aa** or **AA** or **aA** or **Aa**	none
Å (A ring)	***A**	none
Ü (U umlaut)	**"U**	none
é (e acute)	**'e**	none
å (a ring)	***a**	none
ü (u umlaut)	**"u**	none

* Press the COMPOSE CHARACTER key before entering the sequence.

The Finnish keyboard is shown in Figure A–6.

French National Character Set

Table B–7. French National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	à	120 80 50	P	140 96 60	`	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	£	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	°	153 107 6B	k	173 123 7B	é
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	ç	154 108 6C	l	174 124 7C	ù
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	§	155 109 6D	m	175 125 7D	è
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	n	176 126 7E	••
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	—	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	
DECIMAL	27	**ESC** CHARACTER
HEX	1B	

The Flemish keyboard is shown in Figure A–3 and the French/ Belgian keyboard is shown in Figure A–14.

Appendix B. Using National Keyboards

Table B–8. Flemish Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
£ (pound sign)	**–I** or **–L** or **=I** or **=L**	none
§ (section)	**!s** or **!S** or **os** or **oS** or **Os** or **OS** or **0s** or **0S**	none
ù (u grave)	**`u**	none
è (e grave)	**`e**	none

Table B–9. French/Belgian Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
£ (pound sign)	**–I** or **–L** or **=I** or **=L**	none
§ (section)	**!s** or **!S** or **os** or **oS** or **Os** or **OS** or **0s** or **0S**	none
è (e grave)	**`e**	none
ù (u grave)	**`u**	none

NOTE:

¨ is displayed as " and represented to the host by ".

* Press the COMPOSE CHARACTER key before entering the sequence.

Canadian (French) National Character Set

Table B–10. Canadian (French) National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	à	120 80 50	P	140 96 60	ô	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	#	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	â	153 107 6B	k	173 123 7B	é
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	ç	154 108 6C	l	174 124 7C	ù
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	ê	155 109 6D	m	175 125 7D	è
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	î	156 110 6E	n	176 126 7E	û
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	—	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	
DECIMAL	27	ESC
HEX	1B	

CHARACTER

Appendix B. Using National Keyboards

Table B–11. Canadian (French) Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
à (a grave)	`a	`a
â (a circumflex)	^a	^a
ç (c cedilla — lowercase only)	,c	none
ê (e circumflex)	^e	^e
è (e grave)	`e	`e
î (i circumflex)	^ı	^ı
ô (o circumflex)	^o	^o
ù (u grave)	`u	`u
û (u circumflex)	^u	^u

* Press the COMPOSE CHARACTER key before entering the sequence.

The Canadian (French) keyboard is shown in Figure A–4.

German National Character Set

Table B–12. German National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	§	120 80 50	P	140 96 60	`	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	#	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	Ä	153 107 6B	k	173 123 7B	ä
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	Ö	154 108 6C	l	174 124 7C	ö
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	Ü	155 109 6D	m	175 125 7D	ü
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	n	176 126 7E	ß
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	_	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	ESC	CHARACTER
DECIMAL	27		
HEX	1B		

Appendix B. Using National Keyboards

Table B–13. German Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
Ä (A umlaut)	**"A**	none
Ü (U umlaut)	**"U**	none
ä (a umlaut)	**"a**	none
ü (u umlaut)	**"u**	none

* Press the COMPOSE CHARACTER key before entering the sequence.

The German keyboard is shown in Figure A–7.

Italian National Character Set

Table B–14. Italian National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	§	120 80 50	P	140 96 60	ù	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q,
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	£	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	°	153 107 6B	k	173 123 7B	à
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	ç	154 108 6C	l	174 124 7C	ò
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	é	155 109 6D	m	175 125 7D	è
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	n	176 126 7E	ì
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	_	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	ESC
DECIMAL	27	
HEX	1B	

CHARACTER

Table B–15. Italian Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
£ (pound sign)	**–l** or **–L** or **=l** or **=L**	none
§ (section)	**!s** or **!S** or **os** or **oS** or **Os** or **OS** or **0s** or **0S**	none
à (a grave)	**`a**	**`a**
ç (c cedilla)	**,c**	none
é (e acute)	**'e**	none

* Press the COMPOSE CHARACTER key before entering the sequence.

The Italian keyboard is shown in Figure A–9.

Norwegian/Danish National Character Set

Table B–16. Norwegian/Danish National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	Ä	120 80 50	P	140 96 60	ä	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	#	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	Æ	153 107 6B	k	173 123 7B	æ
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	Ø	154 108 6C	l	174 124 7C	ø
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	Å	155 109 6D	m	175 125 7D	å
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	Ü	156 110 6E	n	176 126 7E	ü
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	_	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	ESC
DECIMAL	27	
HEX	1B	

CHARACTER

The Danish keyboard is shown in Figure A–5 and the Norwegian keyboard is shown in Figure A–13.

Appendix B. Using National Keyboards

Table B–17. Danish Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
# (number sign)	+ +	none
Ä (A umlaut)	**··A** or **"A**	**··A**
Å (A ring)	***A**	none
Ø (O slash)	**O/**	none
Ü (U umlaut)	**··U**	**··U**
ä (a umlaut)	**··a** or **"a**	**··a**
å (a ring)	***a**	none
ø (o slash)	**o/**	none
ü (u umlaut)	**··u** or **"u**	**··u**

Table B–18. Norwegian Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
# (number sign)	+ +	none
Å (A ring)	**°A** or ***A**	none
Ä (A umlaut)	**··A** or **"A**	**··A**
Æ (AE dipthong)	**AE** (in this order)	none
Ü (U umlaut)	**··U** or **"U**	**··U**
ä (a umlaut)	**··a** or **"a**	**··a**
æ (ae dipthong)	**ae** (in this order)	none
å (a ring)	**°a** or ***a**	none
ü (u umlaut)	**··u** or **"u**	**··u**

* Press the COMPOSE CHARACTER key before entering the sequence.

Spanish National Character Set

Table B–19. Spanish National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	§	120 80 50	P	140 96 60	`	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	£	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	¡	153 107 6B	k	173 123 7B	º
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	Ñ	154 108 6C	l	174 124 7C	ñ
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	¿	155 109 6D	m	175 125 7D	ç
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	^	156 110 6E	n	176 126 7E	~
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	—	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	ESC
DECIMAL	27	
HEX	1B	

CHARACTER

Table B–20. Spanish Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
£ (pound sign)	**–l** or **–L** or **=l** or **=L**	none
§ (section)	**!s** or **!S** or **os** or **oS** or **Os** or **OS** or **0s** or **0S**	none
¡ (inverted !)	**!!**	none
¿ (inverted ?)	**??**	none
° (degree sign)	**^0**	none

* Press the COMPOSE CHARACTER key before entering the sequence.

The Spanish keyboard is shown in Figure A–15.

Swedish National Character Set

Table B–21. Swedish National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	É	120 80 50	P	140 96 60	é	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	#	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	Ä	153 107 6B	k	173 123 7B	ä
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	Ö	154 108 6C	l	174 124 7C	ö
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	Å	155 109 6D	m	175 125 7D	å
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	Ü	156 110 6E	n	176 126 7E	ü
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	—	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	ESC	CHARACTER
DECIMAL	27		
HEX	1B		

Appendix B. Using National Keyboards

Table B–22. Swedish Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
# (number sign)	+ +	none
Å (A ring)	*A	none
É (E acute)	'E	none
Ü (U umlaut)	"U	none
å (a ring)	*a	none
é (e acute)	'e	none
ü (u umlaut)	"u	none

* Press the COMPOSE CHARACTER key before entering the sequence.

The Swedish keyboard is shown in Figure A–12.

Swiss National Character Set

Table B–23. Swiss National Character Set

COL / ROW	0		1		2		3		4		5		6		7	
0	0 0 0	NUL	20 16 10	DLE	40 32 20	SP	60 48 30	0	100 64 40	à	120 80 50	P	140 96 60	ô	160 112 70	p
1	1 1 1	SOH	21 17 11	DC1 (XON)	41 33 21	!	61 49 31	1	101 65 41	A	121 81 51	Q	141 97 61	a	161 113 71	q
2	2 2 2	STX	22 18 12	DC2	42 34 22	"	62 50 32	2	102 66 42	B	122 82 52	R	142 98 62	b	162 114 72	r
3	3 3 3	ETX	23 19 13	DC3 (XOFF)	43 35 23	ù	63 51 33	3	103 67 43	C	123 83 53	S	143 99 63	c	163 115 73	s
4	4 4 4	EOT	24 20 14	DC4	44 36 24	$	64 52 34	4	104 68 44	D	124 84 54	T	144 100 64	d	164 116 74	t
5	5 5 5	ENQ	25 21 15	NAK	45 37 25	%	65 53 35	5	105 69 45	E	125 85 55	U	145 101 65	e	165 117 75	u
6	6 6 6	ACK	26 22 16	SYN	46 38 26	&	66 54 36	6	106 70 46	F	126 86 56	V	146 102 66	f	166 118 76	v
7	7 7 7	BEL	27 23 17	ETB	47 39 27	'	67 55 37	7	107 71 47	G	127 87 57	W	147 103 67	g	167 119 77	w
8	10 8 8	BS	30 24 18	CAN	50 40 28	(	70 56 38	8	110 72 48	H	130 88 58	X	150 104 68	h	170 120 78	x
9	11 9 9	HT	31 25 19	EM	51 41 29	)	71 57 39	9	111 73 49	I	131 89 59	Y	151 105 69	i	171 121 79	y
10	12 10 A	LF	32 26 1A	SUB	52 42 2A	*	72 58 3A	:	112 74 4A	J	132 90 5A	Z	152 106 6A	j	172 122 7A	z
11	13 11 B	VT	33 27 1B	ESC	53 43 2B	+	73 59 3B	;	113 75 4B	K	133 91 5B	é	153 107 6B	k	173 123 7B	ä
12	14 12 C	FF	34 28 1C	FS	54 44 2C	,	74 60 3C	<	114 76 4C	L	134 92 5C	ç	154 108 6C	l	174 124 7C	ö
13	15 13 D	CR	35 29 1D	GS	55 45 2D	–	75 61 3D	=	115 77 4D	M	135 93 5D	ê	155 109 6D	m	175 125 7D	ü
14	16 14 E	SO	36 30 1E	RS	56 46 2E	.	76 62 3E	>	116 78 4E	N	136 94 5E	î	156 110 6E	n	176 126 7E	û
15	17 15 F	SI	37 31 1F	US	57 47 2F	/	77 63 3F	?	117 79 4F	O	137 95 5F	è	157 111 6F	o	177 127 7F	DEL

KEY:

OCTAL	33	
DECIMAL	27	ESC CHARACTER
HEX	1B	

The Swiss (French) keyboard is shown in Figure A–10 and the Swiss (German) keyboard is shown in figure A–11.

Appendix B. Using National Keyboards

Table B–24. Swiss (French) Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
ä (a umlaut)	**"a**	none
ç (c cedilla)	**,c**	none
ê (e circumflex)	**^e**	**^e**
î (i circumflex)	**^i**	**^i**
ô (o circumflex)	**^o**	**^o**
ö (o umlaut)	**"o**	none
û (u circumflex)	**^u**	**^u**
ü (u umlaut)	**"u**	none
`u (u grave)	**`u**	**`u**

Table B–25. Swiss (German) Keyboard Compose Character Sequences

Composite Character	COMPOSE CHARACTER Key Sequence*	Shortcut Sequence
à (a grave)	**`a**	**`a**
ç (c cedilla)	**,c**	none
ê (e circumflex)	**^e**	**^e**
é (e acute)	**'e**	none
è (e grave)	**`e**	**`e**
î (i circumflex)	**^i**	**^i**
ô (o circumflex)	**^o**	**^o**
û (u circumflex)	**^u**	**^u**
ù (u grave)	**`u**	**`u**

* Press the COMPOSE CHARACTER key before entering the sequence.

Shortcut Compose Method

Table B–26. Alternate Multinational Mode Character Compose Sequences

Resultant Character	Characters Required	Other Characters Possible With Sequence
À (A grave)	`A	È Ì Ò Ù
Á (A acute)	'A	É Í Ó Ú
Â (A circumflex)	^A	Ê Î Ô Û
Ã (A tilde)	~A	Ñ Õ *
Ä (A umlaut)	"A	Ë Ï Ö Ü Ÿ
Å (A ring)	°A	
" (quotation mark)	" (sp)**	
' (apostrophe)	' (sp)	
^ (circumflex)	^ (sp)	
‘ (single quote)	‘ (sp)	
~ (tilde)	~ (sp)	
° (degree sign)	° (sp)	

* No lowercase

** sp = space bar

Appendix C. Interfaces

This appendix describes the SVT-1220 communications environment including a host computer and a printer.

The terminal operates on half or full-duplex asynchronous lines. The terminal supports ten possible transmit/receive speeds which are selected by the operator (host transmit speed feature, communications set-up screen (section 3.), and AUX speed feature, printer set-up screen (section 3).

The SVT-1220 complies with the following communications standards:

- EIA Standard RS-232-C
- CCITT V.24
- CCITT V.26 (V.10)
- CCITT X.20 (V.21)

C.1. Host and Printer Interfaces

The SVT-1220 has two asynchronous serial ports. The host port connector (MAIN) is a 25-pin subminiature D-type (EIA RS-232) connector used to connect the terminal to a local or remote host. The printer port (AUX) is a 25-socket subminiature D-type (EIA RS-232-C) connector used to connect the terminal to a local printer or second host.

The interface signals for the two connectors are described in Table C–1. Connector pins not listed are not connected.

Table C–1. Connector Pin Assignments

Pin	MAIN	AUX
1	Protective ground	Protective ground
2	Transmit data (TXD)	Receive data (RXD)
3	Receive data (RXD)	Transmit data (TXD)
4	Request to send (RTS)	
5	Clear to send (CTS)	Request to send (RTS)
6	Data set ready (DSR)	Data terminal ready (DTR)
7	Signal ground	Signal ground
8	Carrier detect (CD)	
12	Speed indicator (SPDI)	
20	Data terminal ready (DTR)	Data set ready (DSR)
23	Speed select (SPDS)	

MAIN Port

Protective Ground–Pin 1

This conductor is electrically connected to the SVT-1220 chassis.

Transmit Data (From SVT-1220)–Pin 2

The SVT-1220 transmits serially encoded characters and break signals on this pin, which is held in the mark state when neither are being transmitted.

Receive Data (to SVT-1220)–Pin 3

The SVT-1220 receives serially encoded characters sent by the user's equipment.

Request to Send (From SVT-1220)–Pin 4

When this pin is asserted, the SVT-1220 places the modem in transmit mode.

Clear to Send (to SVT-1220)–Pin 5

When this pin is asserted, the modem is ready to transmit data.

Data Set Ready (to SVT-1220)–Pin 6

When this pin is asserted, the modem is in the data mode and is ready to exchange RTS, CTS, and CD.

Signal Ground–Pin 7

This pin is the common ground reference for all connecter signals except protective ground.

Carrier Detect (to SVT-1220)–Pin 8

When this pin is asserted, the signal received by the modem is of sufficient quality to ensure proper demodulation of received data. When not asserted, the modem is not receiving a signal or the signal is not suitable for demodulation.

Speed Indicator (to SVT-1220)–Pin 12

When this pin is asserted, the modem controls the SVT-1220 transmit and receive speeds. The SVT-1220 transmits at 1200 baud regardless of the host transmit speed feature selection.

Data Terminal Ready (From SVT-1220)–Pin 20

When this pin is asserted, the SVT-1220 is ready to transmit or receive data.

Speed Select (From SVT-1220)–Pin 23

When this pin is asserted, the receive speed selection for the host transmit speed feature is greater than 600 baud.

AUX Port

Protective Ground–Pin 1

This conductor is electrically connected to the SVT-1220 chassis.

Transmit Data (From SVT-1220)–Pin 3

The SVT-1220 transmits serially encoded characters and break signals on this pin, which is held in the mark state when neither are being transmitted.

Receive Data (to SVT-1220)–Pin 2

The SVT-1220 receives serially encoded characters sent by the user's equipment.

Request to Send (From SVT-1220)–Pin 5

Asserted when SVT-1220 is on.

Data Set Ready (to SVT-1220)–Pin 20

The SVT-1220 receives DTR from the auxiliary device on the line. If asserted at power up, the printer controls print operations. If not asserted at power up, the SVT-1220 checks for the printer to assert this line before each character print operation.

Signal Ground–Pin 7

This pin is the common ground reference for all connecter signals except protective ground.

Data Terminal Ready (From SVT-1220)–Pin 6

When this pin is asserted, the SVT-1220 is ready to transmit or receive data.

C.2. Modems

The SVT-1220 can operate with all modems conforming to the standards listed in section C.1. The modem connected to the terminal must be compatible with the host modem.

Appendix D. SVT–1220 Specifications

Dimensions

Monitor	Height: 255 mm (10 in.) Width: 320 mm (12.6 in.) Depth: 320 mm (12.6 in.)
Terminal base	Height: 86 mm (3.4 in.) Width: 320 mm (12.6 in.) Depth: 307 mm (12.1 in.)
Keyboard	Height: 36 mm (1.4 in.) Width: 528 mm (20.8 in.) Depth: 175 mm (6.9 in.)
Terminal base and monitor	Height: 355 mm (14 in.) Width: 320 mm (12.6 in.) Depth: 320 mm (12.6 in.)
Packing box	Height: 455 mm (17.9 in.) Width: 569 mm (22.4 in.) Depth: 429 mm (16.9 in.)

Weight

Terminal base and monitor	6.8 Kg (15 lb)
Keyboard	1.6 Kg (3.5 lb)
Shipping weight	14.8 Kg (32.6 lb)

Specifications

Environment

Operating	Temperature: 10° to 40° C (50° to 104° F) Relative humidity: 10 to 90% (noncondensing)
Non-operating	Temperature: – 20° to 60° C (– 4° to 136° F) Relative humidity: 0 to 95%

Power

Line voltage	95–135 V RMS single-phase, 2 wire 170–270 V RMS single-phase, 2 wire
Line frequency	47–63 Hz
Current	0.6 A RMS maximum at 120 V RMS 0.3 A RMS maximum at 240 V RMS
Input power	70 VA 35 W
Current limiting	2 A normal blow fuse
Power cord	3–conductor plug, 1.9 m (6 ft)

Appendix D. Specifications

Display

CRT	12–inch diagonal measure, P31 nonglare
Format	24 line x 80 or 132 characters (selectable)
Character size	
80 columns	7 x 10 dot matrix in 10 x 10 cells 800 (horizontal) x 240 (vertical) pixels
132 columns	7 x 10 dot matrix in 9 x 10 cell 1188 (horizontal) x 240 (vertical) pixels
Active display size	210 mm x 150 mm (8.3 x 6 inch)
Character sets	94–character displayable ASCII subset (uppercase, lowercase, numeric, and punctuation) in 7–bit modes; different character set for each language; any combination of reverse video, bold, and blinking; up to 188 characters in VT200 8–bit mode
Cursor type	Static or blinking block or underline (selectable)

Specifications

Keyboard

Description	105–key detachable unit with attached 1.9 m (6 ft) coiled cord; 15 nationalities supported
Key layout	57–key arrangement and sculpturing similar to standard typewriter keyboard with a numeric keypad, an editing key-pad, and 20 function keys on the top row
Numeric keypad	18–key numeric pad with period, comma, minus, ENTER, and four general-purpose function keys
Indicator LEDs	Power, Hold Screen, Lock, Wait, Compose
Audible signals	Keyclick alarm which sounds upon receipt of BEL code and eight charac-ters from right margin (selectable)

Appendix D. Specifications

Communications

Type	EIA
Speeds (MAIN)	Full duplex: 75, 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 BPS
Speeds (AUX)	75, 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 BPS (RS–232–C printer connection is permitted)
Code	ASCII
Data format	Asynchronous
Character size	7 or 8 bits (selectable). If 8–bit is selected, eighth bit is always a space.
Parity	Even, odd, or none (selectable)
Synchronization (MAIN)	Selectable via automatic generation of XON/XOFF
Synchronization (AUX)	Same as MAIN

Appendix E.
VT52 Mode Control Sequences

Section 5.1 contains additional information on VT52 mode. Table E–1 summarizes the VT52 mode control sequences. A brief description of each command follows.

Table E–1. VT52 Mode Control Sequences

Command	Sequence
Cursor up	ESC A
Cursor down	ESC B
Cursor right	ESC C
Cursor left	ESC D
Select special graphics character set	ESC F
Select ASCII character set	ESC G
Cursor to home	ESC H
Reverse line feed	ESC I
Erase to end of screen	ESC J
Erase to end of line	ESC K
Direct cursor address	ESC Y line column[1]
Identify	ESC Z[2]
Enter alternate keypad mode	ESC =
Exit alternate keypad mode	ESC >
Enter ANSI mode	ESC <
Enter auto print mode	ESC ^[3]
Exit auto print mode	ESC _[3]
Enter printer controller mode	ESC W[3]
Exit printer controller mode	ESC X[3]
Print screen	ESC][3]
Print cursor line	ESC V[3]

[1] Line and column numbers are single-character codes whose values are the desired number plus 1F (hex). Line and column numbers start at 1.

[2] See section 11.1 for response.

[3] See Chapter 12 for descriptions.

Mode Control Sequences

Cursor Up

ESC A

Moves the active position upward one position without altering the horizontal position. If an attempt is made to move the cursor above the top margin, the cursor stops at the top margin.

Cursor Down

ESC B

Moves the active position downward one position without altering the horizontal position. If an attempt is made to move the cursor below the bottom margin, the cursor stops at the bottom margin.

Cursor Right

ESC C

Moves the active position to the right. If an attempt is made to move the cursor to the right of the right margin, the cursor stops at the right margin.

Cursor Left

ESC D

Moves the active position to the left. If an attempt is made to move the cursor to the left of the left margin, the cursor stops at the left margin.

Enter Graphics Mode

ESC F

Causes the special graphics character set to be used.

Appendix E. Mode Control Sequences

Exit Graphics Mode

ESC G

Causes the standard ASCII character set to be used.

Cursor to Home

ESC H

Moves the cursor to the home position.

Reverse Line Feed

ESC I

Moves the active position upward one position without altering the column position. If the active position is at the top margin, a scroll down is performed.

Erase to End of Screen

ESC J

Erases all characters from the active position to the end of the screen. The active position is not changed.

Erase to End of Line

ESC K

Erases all characters from the active position to the end of the current line. The active position is not changed.

Direct Cursor Address

ESC Y line column

Moves the cursor to the specified line and column. The line and column numbers are sent as ASCII codes whose values are the number plus 1F (hex), e.g., 20 (hex) refers to the first line or column, 28 (hex) refers to the eighth line or column, etc.

Identify

ESC Z

Causes the terminal to send its identifier escape sequence to the host. This sequence is:

ESC / Z

Enter Alternate Keypad Mode

ESC =

The numeric keypad keys send unique identifiable escape sequences for use by applications programs.

Exit Alternate Keypad Mode

ESC >

The numeric keypad keys send the ASCII codes for the functions or characters engraved on the keys.

Enter ANSI Mode

ESC <

All subsequent escape sequences will be interpreted according to ANSI Standard X3.64–1977 and X3.41–1974. The VT52 escape sequences defined in this appendix are not recognized.

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UP-11205

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TAPE DO NOT STAPLE TAPE

SPERRY®
Video Terminal
SVT-1220

Installation Guide

Multilingual Version

Français 1

Deutsch 9

Italiano 17

Español 25

SPERRY

UP–11460

PRINTED IN KOREA

Introduction

Ce manuel fournit les informations nécessaires pour installer le terminal 1220 Sperry (SVT-1220) auquel une imprimante peut être connectée pour imprimer des données à partir de l'ordinateur ou de l'écran.

Le carton de transport contient:

- Terminal intallé sur socle orientable/rotatif
- Clavier plat qui se connecte au socle
- Documentation
- Formulaire de réparation

> N.B. — Conserver le matériel d'emballage pour transport ultérieur ainsi que le formulaire de réparation en cas de réparation.

Ce manuel contient les informations nécessaires pour connecter le terminal à l'ordinateur, le clavier, les câbles d'imprimante, et ajuster l'affichage. Il explique aussi le test de fonctionnement du SVT-1220 et décrit de simples procédures d'identification de problèmes. La dernière section explique comment remplacer les touches pour changer la composition du clavier américain de base.

Le manuel pour utilisateurs SVT-1220 SPERRY, UP-11205, fournit toute information supplémentaire pour compléter l'installation du terminal.

Connexion du terminal

1. Vérifier que l'interrupteur d'alimentation, à l'arrière du terminal, est sur la position OFF (arrêt).

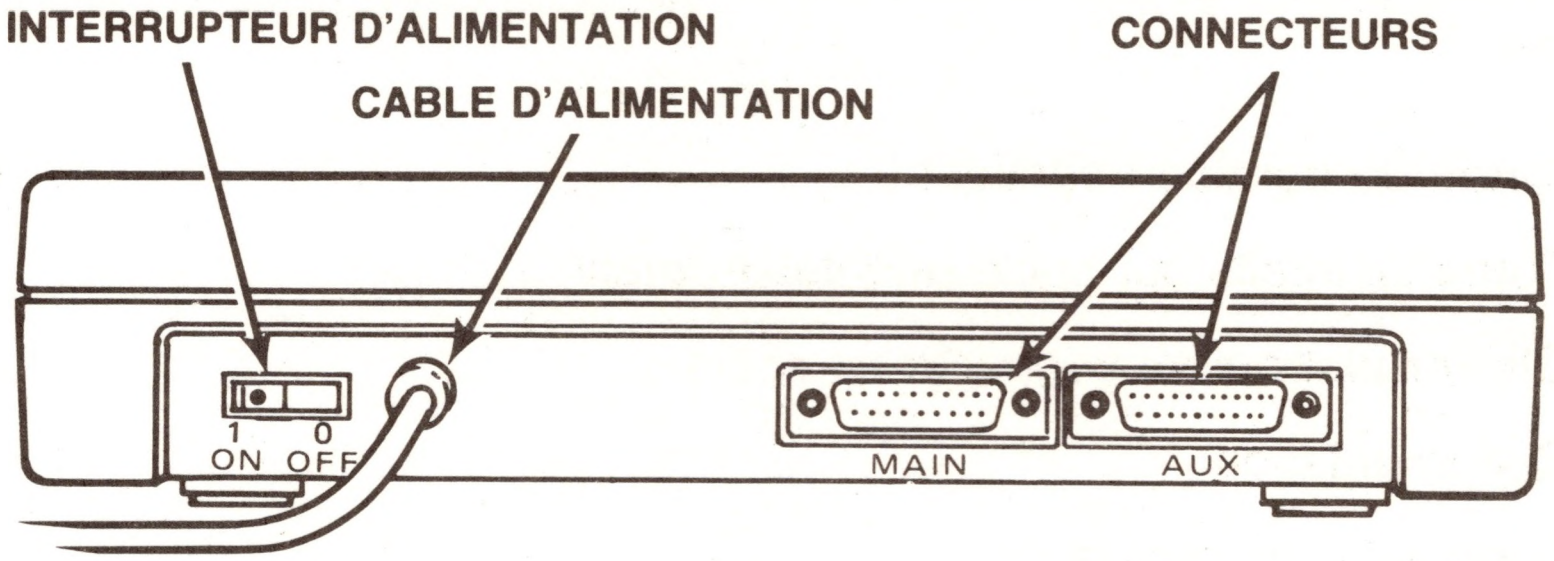


Figure 1. Vue arrière du terminal

2. Connecter le câble de clavier au connecteur sur la gauche du terminal (figure 2).

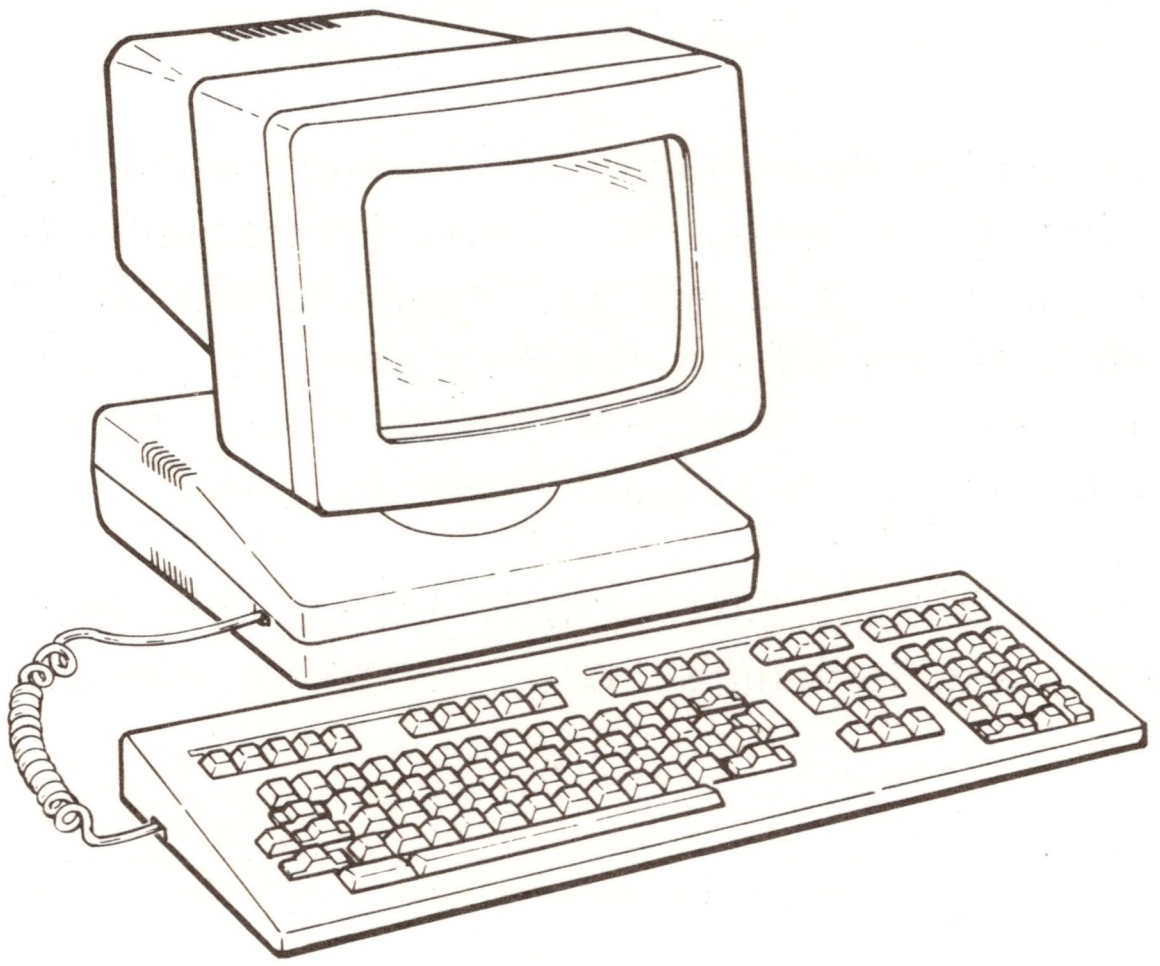


Figure 2. Terminal SVT-1220 et clavier

3. Connecter le terminal selon le manuel d'installation de l'ordinateur, consulter le programmeur du système ou se référer au manuel pour utilisateurs du SVT-1220 SPERRY pour toute information concernant les modes de communication. Voici les différents choix:

Connecté	**à Connecteur**
Un ordinateur	MAIN ou AUX
Deux ordinateurs	MAIN et AUX
Un ordinateur et une imprimante	MAIN pour l'ordinateur AUX pour l'imprimante

4. Si une imprimante est connectée au terminal, connecter le câble de communications de l'ordinateur au connecteur MAIN et le câble d'imprimante au connecteur AUX à l'arrière du terminal.

5. Si le terminal est connecté à un ordinateur sans imprimante, connecter le câble de communications de l'ordinateur au connecteur MAIN ou AUX.

6. Si le terminal est connecté à deux ordinateurs, connecter le câble de communications du premier ordinateur au connecteur MAIN et celui du deuxième ordinateur au connecteur AUX.

7. Brancher le câble d'alimentation sur une prise de courant connectée à la terre.

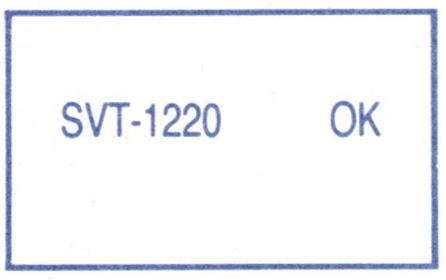
8. Tourner le terminal vers la droite ou la gauche et l'orienter vers le haut ou le bas pour avoir une bonne vue de l'écran.

N.B. — L'installation du terminal n'est pas terminée avant que les caractéristiques requises par les communications d'ordinateur soient établies selon les procédures décrites au chapître 3 du manuel pour utilisateurs du SVT-1220.

Mise en marche du terminal

1. Mettre l'interrupteur d'alimentation, à l'arrière du terminal (figure 1), sur la position ON (marche).

   Le terminal exécute automatiquement un test de fonctionnement. Si le test réussit, le terminal est prêt et le message suivant apparaît au centre de l'écran:



   Le message "OK" disparaît lorsqu'une touche quelconque est appuyée.

2. Si l'un des messages de la table 1 apparaît, le terminal n'est pas prêt et une action corrective est requise. Passer à la section suivante.

Identification de problèmes

Le test de fonctionnement du terminal identifie plusieurs problèmes possibles. La table 1 liste les messages d'erreurs du test de fonctionnement et les mesures à prendre. La table 2 identifie d'autres symptômes et les mesures à prendre correspondantes.

Si un problème se produit, effectuer l'action corrective appropriée et repasser le test de fonctionnement en arrêtant le terminal et le rallumant. Si le problème persiste, contacter le centre de service de Sperry.

Table 1. Messages d'erreurs du test de fonctionnement et mesures à prendre.

Messages d'erreur	Mesures à prendre
KBD ERROR	Arrêter le terminal. Connecter le câble de clavier dans le connecteur latéral du terminal. Rallumer le terminal.
ROM ERROR	Arrêter le terminal et le rallumer.
ARAM ERROR	Arrêter le terminal et le rallumer.
CRAM ERROR	Arrêter le terminal et le rallumer.
SRAM ERROR	Les caractéristiques établies dans la mémoire non volatile RAM (NVR) sont retournées aux valeurs prédéterminées qui ne sont peut-être pas voulues. Se référer au chapître 3 du manuel pour utilisateurs du SVT-1220 et suivre les procédures d'installation du terminal.

Table 2. Mesures à prendre pour autres problèmes

Symptmes	**Origine probable et mesures à prendre**
L'écran est vide. L'indicateur Power (alimentation) du clavier est allumé.	L'effacement automatique de l'écran s'est activé. Appuyer sur n'importe quelle touche pour restaurer l'affichage. Si l'écran reste vide, ajuster le contrôle de luminosité, sur la droite du terminal.
Le terminal ne s'allume pas lorsque l'interrupteur d'alimentation est appuyé.	Vérifier les connexions du câble d'alimentation.
Le clavier ne fonctionne pas. L'indicateur Wait du clavier est allumé.	L'ordinateur ne répond pas ou a bloqué le clavier. Sélectionner "Clear Comm" (annuler communication) sur le menu d'installation (se référer au manuel pour utilisateurs du SVT-1220). Si le problème persiste, vérifier que l'ordinateur est actif.
Des caractères déformés ou des symboles d'erreur sont affichés.	Certains codes du terminal peuvent être incompatibles avec l'ordinateur. Afficher les menus d'installation et vérifier les codes requis par les communications de l'ordinateur (se référer au manuel pour utilisateur du SVT-1220).

Remplacement des touches

Cette section explique comment remplacer les touches du clavier américain par celles d'un clavier local.

On doit avoir les articles suivants :

- Le fil de retrait des touches
- Les touches de remplacement
- Deux longues étiquettes
- Une feuille d'instructions avec illustrations de clavier

Retrait des touches

1. Arrêter le terminal.
2. Déconnecter le câble du clavier.
3. Identifier les touches à remplacer (celles mise en évidence sur la figure 1, au dos des instructions).
4. Insérer les boucles du fil de retrait des touches sous les côtés latéraux de la touche. Retirer la touche en tirant le fil.
5. Répéter les procédures pour chaque touche à remplacer.

Remplacement des touches

1. Identifier l'emplacement d'une touche (les touches mise en évidence sur la figure 2, au dos des instructions).
2. Positionner la touche sur le montant.
3. Enfoncer fermement la touche.
4. Répéter les procédures pour chaque touche.

Insertion des étiquettes adhésives

1. Retirer le papier au dos de la petite bande.
2. Courber légèrement la bande et glisser celle-ci dans la section gauche de la zone étiquettée.
3. Glisser le bout droit de la même bande en place.
4. Positioinner l'étiquette bien à plat.
5. Répéter ces mêmes procédures pour positionner la bande longue du côté droit.
6. Connecter le clavier.
7. Allumer le terminal.

Einleitung

Diese Anleitung enthält grundlegende Anweisungen zur Installation der Sperry-Datensichtstation 1220 (SVT-1220). Zum Druck vom Zentralsystem oder vom Bildschirm kann ein Drucker am Gerät angeschlossen werden.

Im Versandkarton enthalten sind:

- Bildschirm auf Dreh-/Kippuntersatz
- an der Unterseite des Bildschirms anzuschließende Tastatur
- Unterlagen für den Benutzer
- Reparaturberechtigungs-Formular

HINWEIS:

Das Versandmaterial und Reparaturberechtigungs-Formular für den Versand im Falle einer eventuell notwendigen Reparatur aufbewahren.

In dieser Anleitung enthalten sind Hinweise auf den Anschluß der Tastatur-, Zentralsystem- und (falls vorhanden) Druckerkabel. Ebenfalls beschrieben ist der Selbsttest des SVT-1220, der beim Einschalten des Geräts durchgeführt wird, und einfache Maßnahmen zur Behebung einer eventuell auftretenden Störung. Der letzte Abschnitt zeigt den Austausch der Tasten der amerikanischen Tastatur gegen die einer anderen.

Das Benutzerhandbuch des SPERRY SVT-1220, UP-11205 (neueste Ausgabe) enthält weitere zum Beenden der Installation notwendige Hinweise.

Anschluß der Datensichtstation

1. Der Netzschalter auf der Rückseite der Datensichtstation (Abb. 1) muß auf OFF gestellt sein.

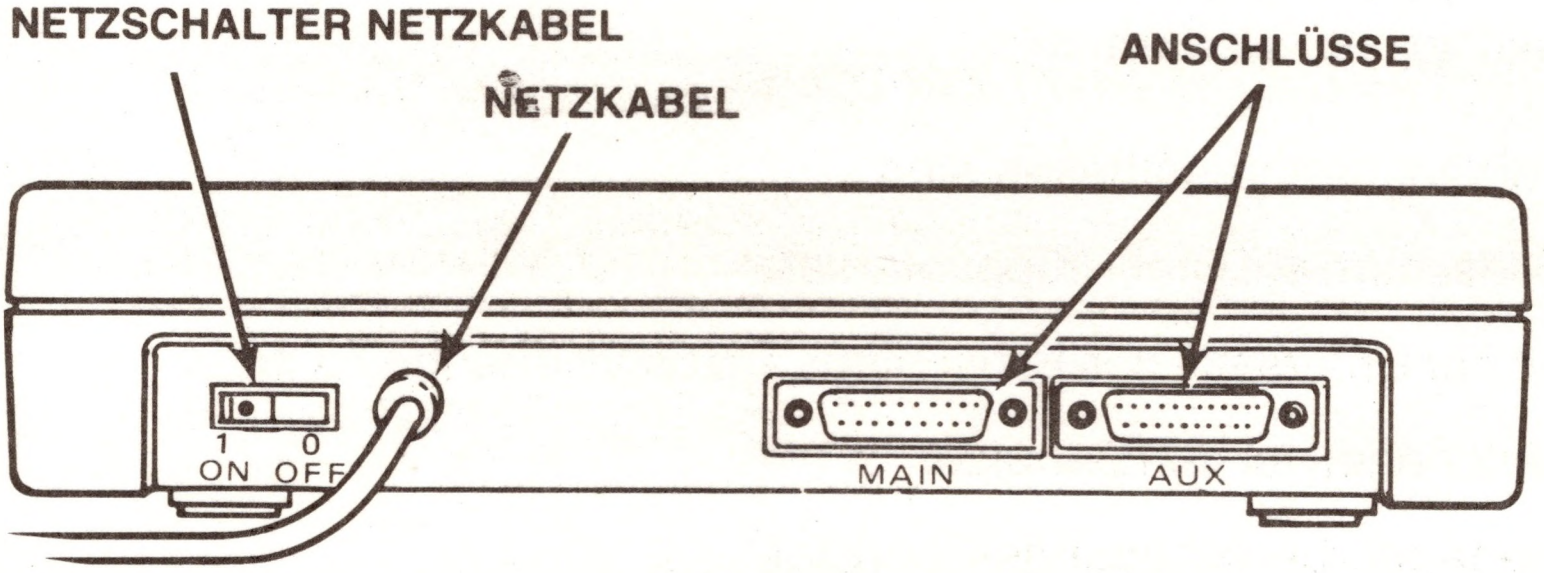


Abb. 1. Rückseite der Datensichtstation

2. Das Spiral-Tastaturkabel am Anschluß auf der linken Seite des Geräts anschließen.

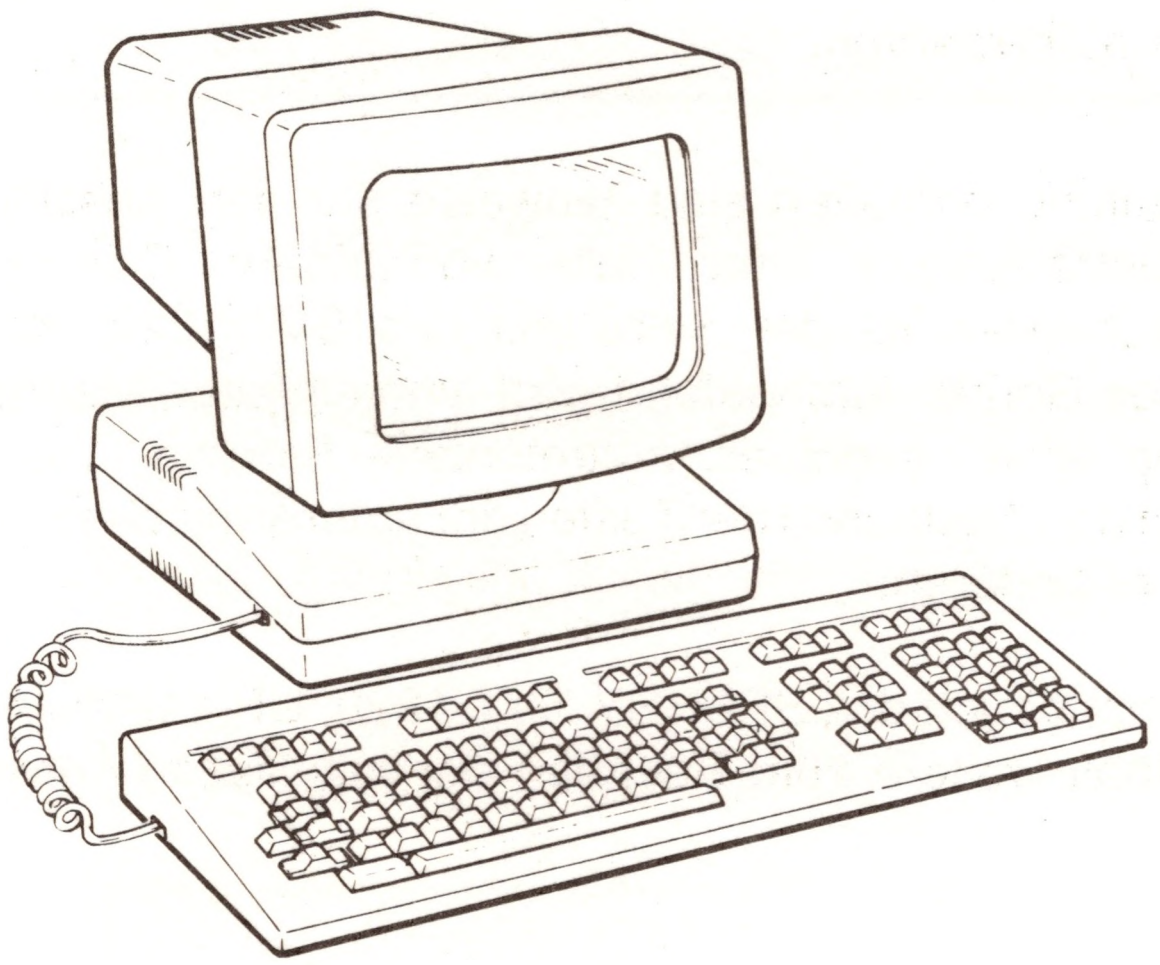


Abb. 2. Bildschirm und Tastatur des SVT-1220

3. Den Anschluß der Datensichtstation gemäß der Installationsanleitung des Zentralsystems oder nach Rücksprache mit dem Systemprogrammierer vornehmen, oder weitere Hinweise auf Datenübertragungsmodi im Benutzerhandbuch des SVT-1220 nachschlagen. Die folgenden Verbindungen sind möglich:

Anschluß an	**zu verwendender Anschluß**
einem Zentralsystem	AIN oder AUX
zwei Zentralsystemen	MAIN und AUX
einem Zentralsystem und einem Drucker	MAIN für Zentralsystem; AUX für Drucker

4. Ist ein Drucker an der Datensichtstation anzuschließen, das DÜ-Kabel des Zentralsystems am Anschluß MAIN und das Druckerkabel am Anschluß AUX auf der Rückseite des Geräts anschließen.

5. Ist die Datensichtstation an einem Zentralsystem ohne Drucker anzuschließen, das DÜ-Kabel des Zentralsystems am Anschluß MAIN oder AUX anschließen.

6. Ist die Datensichtstation an zwei Zentralsystemen anzuschließen, das DÜ-Kabel des ersten Zentralsystems am Anschluß MAIN und das zweite Kabel am Anschluß AUX anschließen.

7. Das Netzkabel der Datensichtstation an einer geerdeten Wechselstrom-Steckdose anschließen.

8. Den Bildschirm wie gewünscht auf dem Dreh-/Kippuntersatz einstellen.

HINWEIS:

Die Installation der Datensichtstation ist erst beendet, wenn die für die Datenübertragung mit dem Zentralsystem notwendigen Charakteristiken gemäß den in Kapitel 3 des Benutzerhandbuchs des SVT-1220 beschriebenen Maßnahmen eingerichtet worden sind.

Einschalten der Datensichtstation

1. Den Netzschalter rechts auf der Rückseite des Geräts einschalten siehe Abb. 1).

   Die Datensichtstation führt automatisch einen Betriebsbereitschafts-Selbsttest durch. Bei erfolgreich verlaufenem Test ist das Gerät betriebsbereit und die folgende Nachricht wird in der Bildschirmmitte abgebildet:


```
SVT-1220    OK
```

   Die Nachricht wird nach Drücken einer beliebigen Taste vom Bildschirm gelöscht.

2. Bei Abbildung einer der in Tabelle 1-1 aufgeführten Nachrichten ist die Datensichtstation nicht betriebsbereit und Maßnahmen zur Störungsbehebung sind erforderlich. Siehe den nächsten Abschnitt.

Maßnahmen zur Störungsbehebung

Der Selbsttest der Datensichtstation zeigt mehrere mögliche Störungen. Tabelle 1 zeigt die Störungsnachrichten des Selbsttests und entsprechende Maßnahmen zur Störungsbehebung. Tabelle 2 zeigt andere möglicherweise auftretende Störungsanzeichen und empfohlene Korrekturmaßnahmen.

Bei einer eventuell auftretenden Störung die entsprechenden Schritte durchführen und das Gerät aus- und wieder einschalten, um den Selbsttest zu wiederholen. Bei anhaltender Störung den Sperry-Vertriebsbeauftragten benachrichtigen.

Tabelle 1. Störungsnachrichten beim Selbsttest; Korrekturmaßnahmen

Störungsnachricht	Maßnahmen zur Störungsbehebung
KBD ERROR	Gerät ausschalten. Tastaturkabel am Datensichtgerät anschließen und Gerät wieder einschalten.
ROM ERROR	Gerät aus- und wieder einschalten.
ARAM ERROR	Gerät aus- und wieder einschalten.
CRAM ERROR	Gerät aus- und wieder einschalten.
SRAM ERROR	Die im nichtflüchtigen Direktzugriffsspeicher RAM (NVR) des Datensichtgeräts gespeicherten Einstellungen wurden auf Standardwerte zurückgestellt und müssen eventuell berichtigt werden. Anweisungen zum Aufstellen des Datensichtgeräts im 3. Kapitel des Benutzerhandbuchs nachschlagen.

Tabelle 2. Korrekturmaßnahmen für andere mögliche Störungen

Störungsanzeichen	**mögliche Ursache und Korrekturmaßnahme**
Ausgedunkelter Bildschirm; Netzanzeige leuchtet.	Automatische Bildschirmausdunklung ist in Kraft getreten. Beliebige Taste drücken. Bei weiterhin dunklem Bildschirm Helligkeitskontrolle auf der rechten Bildschirmseite im Uhrzeigersinn drehen.
Datensichtstation wird bei Drücken des Netzschalters nicht eingeschaltet.	Anschluß des Wechselstrom-Netzkabels an der Steckdose überprüfen.
Keine Tastaturfunktion; Anzeige WAIT leuchet.	Zentralsystem antwortet nicht oder hat Tastatur verriegelt. “Clear Comm” auf dem Einrichtungsmenü (siehe Benutzerhandbuch des SVT-1220) wählen. Bei anhaltender Störung Zentralsystemstelle nach möglicher Betriebsstörung fragen.
Abbildung wirrer Zeichenfolgen oder Störungszeichen.	Bestimmte Datensichtstations-Einstellungen sind eventuell nicht mit dem Zentralsystem kompatibel. Einrichtungsmenüs abbilden und die zur Datenübertragung notwendigen Einstellungen überprüfen (siehe Benutzerhandbuch des SVT-1220).

Die folgenden Anweisungen beschreiben das Entfernen von Tasten von der amerikanischen Tastatur und das Aufsetzen von Tasten für die deutsche Sprache.

Die folgenden Teile sollten vorhanden sein:

- Gerät zum Entfernen der Tasten
- Tüte mit Tasten
- zwei Beschriftungsstreifen
- SVT 1220 mit Tastaturabbildungen

Entfernen der Tasten

1. Die Datensichtstation ausschalten.
2. Das Spiral-Netzkabel abziehen.
3. Die zu entfernenden Tasten identifizieren (die weißen Tasten in Abbildung 1 auf der Rückseite dieser Anweisungen).
4. Die Schlaufen des Geräts zum Entfernen der Tasten unter den schmalen Seiten der Tasten einführen. Die Taste gerade nach oben abziehen.
5. Schritte 1 bis 4 für jede zu entfernende Taste wiederholen.

Aufsetzen neuer Tasten

1. Identifizieren, wo die neuen Tasten aufgesetzt werden sollen (die in Abb. 2 der Anweisungen weiß dargestellten Tasten).
2. Die Taste aufsetzen; die Zeichen befinden sich normalerweise auf der linken Seite.
3. Die Taste fest nach unten drücken.
4. Schritte 1 bis 4 für jede aufzusetzende Taste wiederholen.

Einschieben der Beschriftungsstreifen

1. Beide Streifen sind selbstklebend. Den kürzeren Streifen vom Papier abziehen.
2. Den Streifen leicht biegen und in die linke Seite des Beschriftungsfelds schieben.
3. Die rechte Seite des kürzeren Streifens einschieben.
4. Den Streifen andrücken.
5. Schritte 2 bis 5 durchführen und den längeren Streifen auf der rechten Seite anbringen.
6. Den Tastaturanschluß an einer Steckdose anschließen.
7. Die Datensichtstation einschalten.

Introduzione

Questo manuale dà le informazioni necessarie per l'installazione del terminale Sperry 1220 (SVT-1220). La stampante opzionale può essere collegata al terminale per stampare dall'elaboratore centrale o dallo schermo del terminale.

Il cartone di spedizione include:

- Il monitor di visualizzazione su una base inclinabile/girevole
- La tastiera a basso profilo che viene collegata alla base dello schermo
- La documentazione per l'utente
- Il modulo di autorizzazione per il servizio centralizzato di assistenza Sperry.

NOTA:
Conservare il materiale di imballaggio e il modulo di autorizzazione per il servizio centralizzato di assistenza Sperry in caso si debba spedire il terminale per riparazioni.

Questo manuale contiene le istruzioni per collegare il cavo della tastiera, il cavo di comumicazione e il cavo della stampante opzionale, e per la regolazione dello schermo. Descrive anche il test dello STV-1220 che viene eseguito quando si accende il terminale, e le procedure diagnostiche da eseguire in caso di malfunzionamenti. L'ultima sezione mostra come sostituire i tasti per modificare la tastiera base nord americana in un'altra con diverse caratteristiche.

Il manuale dell'utente dello SPERRY SVT-1220, UP-11205 (versione corrente), fornisce le informazioni supplementari necessarie per completare l'installazione del terminale.

Collegamento del terminale

1. Assicurarsi che l'interruttore di alimentazione situato sul retro del terminale sia nella posizione OFF (spento).

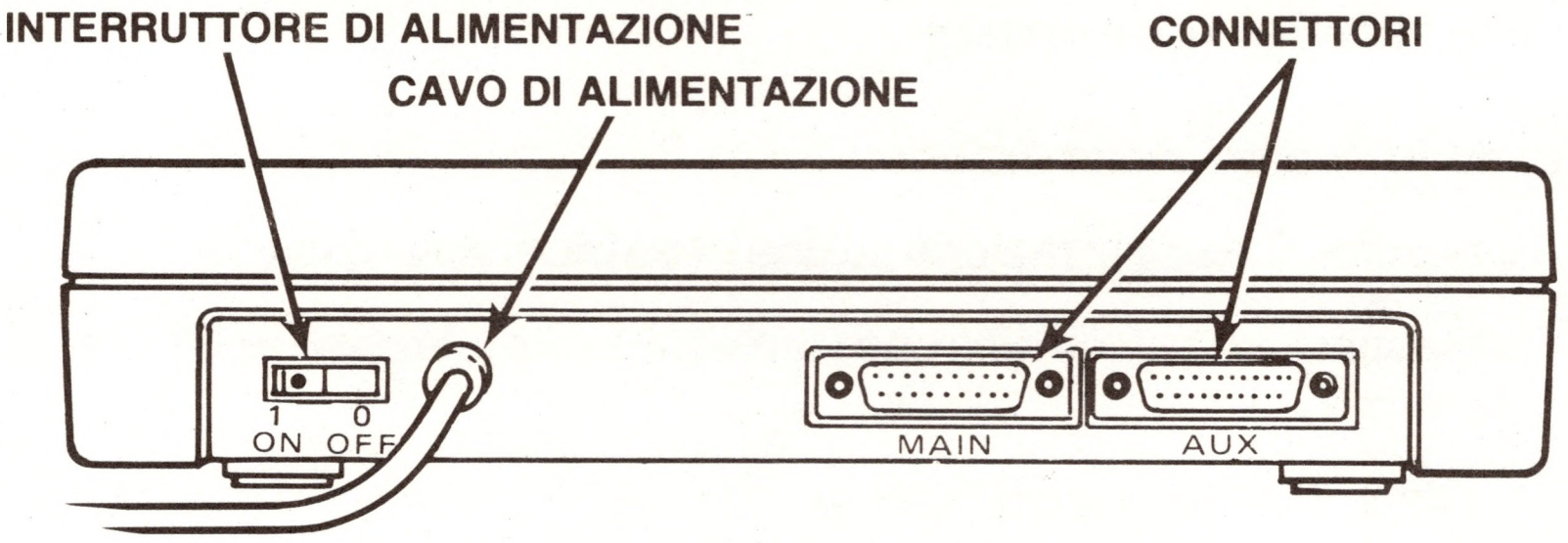


Figura 1. Vista posteriore della base del terminale

2. Collegare il cavo della tastiera al connettore situato sul lato destro del terminale (Figura 2).

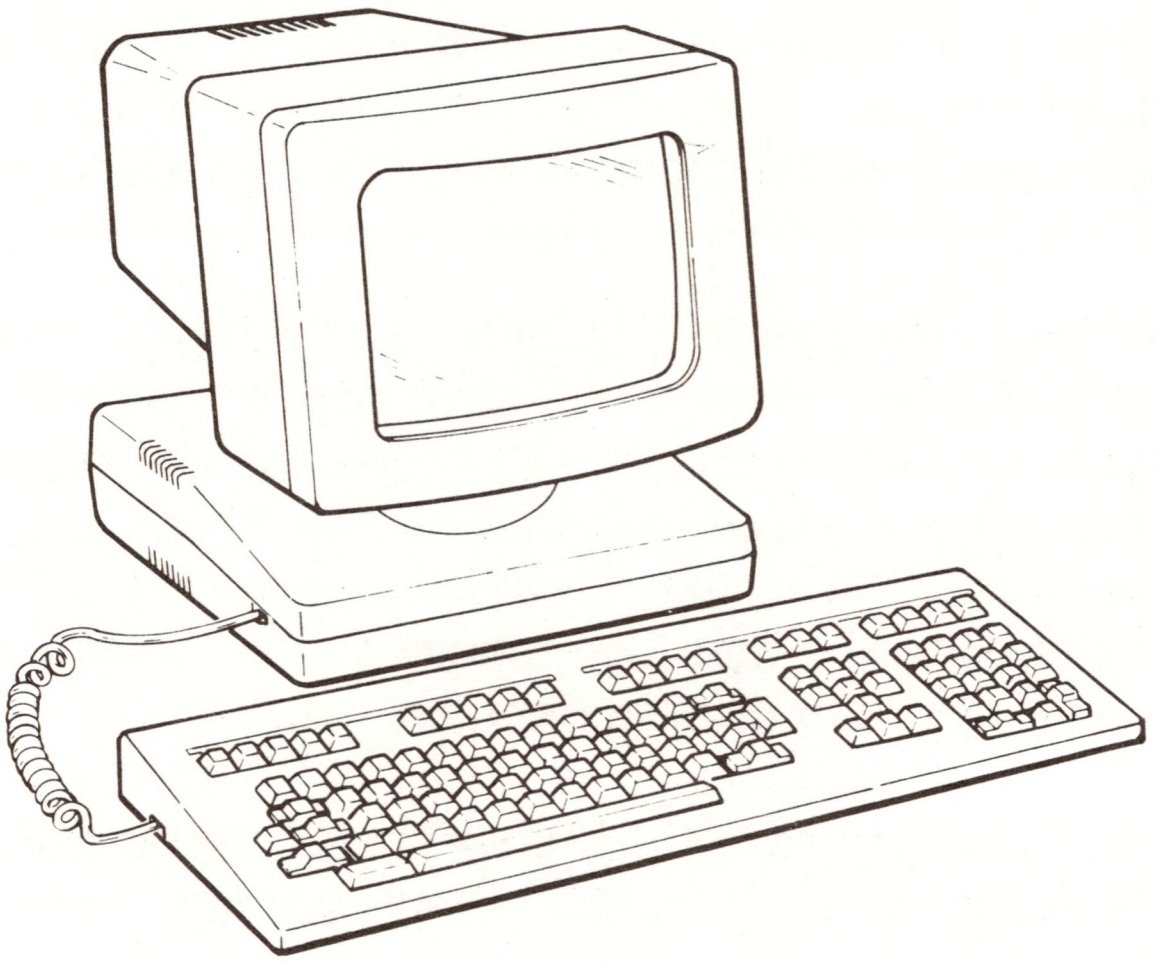


Figura 2. Schermo dello SVT-1220 e tastiera

3. Stabilire come collegare il terminale facendo riferimento al manuale di installazione dell'elaboratore centrale, oppure contattando il programmatore del sistema o facendo riferimento al manuale dell'utente dello SVT-1220 per le informazioni sulle modalità di comunicazione. Le opzioni sono:

Se collegato a:	**Usare il connettore:**
Un elaboratore centrale	MAIN o AUX
Due elaboratori centrali	MAIN o AUX
Un elaboratore centrale e una stampante	MAIN per l'elaboratore AUX per la stampante

4. Se si collega la stampante al terminale, collegare il cavo di comunicazione al connettore MAIN (principale) e il cavo della stampante al connettore AUX (ausiliaria) situati sul retro della base del terminale.

5. Se si collega il terminale a un elaboratore centrale senza stampante , collegare il cavo di comunicazione al connettore MAIN oppure al connettore AUX.

6. Se si collega il terminale a due elaboratori centrali, collegare il primo cavo di comunicazione al connettore MAIN e il secondo cavo al connettore AUX.

7. Collegare il cavo di alimentazione del terminale a una presa di corrente con la messa a terra.

8. Assestare il terminale per ottenere la posizione di lavoro ideale.

NOTA:

L'installazione del terminale non è completa fino a quando non si impostano i parametri per le comunicazioni con l'elaboratore centrale in accordo con le procedure descritte nel capitolo 3 del manuale dell'utente dello SVT-1220.

Accensione del terminale

1. Mettere l'interruttore di alimentazione situato sul retro della base del terminale nella posizione ON (acceso) (vedere la figura 1).

   Il terminale esegue automaticamente il collaudo di accensione. Se il terminale completa questo auto-test ed è pronto per il funzionamento, viene visualizzato il seguente messaggio sullo schermo:

   SVT-1220 OK

   Il messaggio "OK" viene rimosso quando si preme un tasto qualsiasi.

2. Se viene visualizzato uno dei messaggi mostrati nella tabella 1, il terminale non è pronto ed è richiesta un'azione correttiva. Fare riferimento alla seguente sezione.

Diagnostica

L'auto-test del terminale identifica diversi probabili problemi. La tabella 1 mostra i messaggi di errore dell'auto-test e le azioni correttive raccomandate.

Se c'è un problema, eseguire l'azione correttiva appropriata e poi eseguire l'auto-test accendendo e spegnendo il terminale. Se il problema persiste, contattare il Centro Assistenza Sperry.

Tabella 1. Messaggi di errore dell'auto-test e azioni correttive

Messaggio di errore	Azione correttiva
KBD ERROR	Spegnere il terminale. Collegare il cavo della tastiera al connettore situato sul lato destro del terminale. Accendere il terminale.
ROM ERROR	Spegnere e accendere il terminale.
ARAM ERROR	Spegnere e accendere il terminale.
CRAM ERROR	Spegnere e accendere il terminale.
SRAM ERROR	Le impostazioni dei parametri nella memoria RAM non volatile (NVR) del terminale viene effettuata ai valori pre fissati; è probabile che questi valori non siano appropriati. Fare riferimento al capitolo 3 del manuale dell'utente dello SVT-1220 ed eseguire le istruzioni per l'impostazione del terminale.

Tabella 2. Azione correttiva per gli altri problemi

Indicazione	**Causa probabile e azione correttiva**
Lo schermo è vuoto; l'indicatore di alimentazione della tastiera è acceso.	La caratteristica spegnimento automatico è intervenuto. Premere un tasto qualsiasi. Se lo schermo è ancora vuoto, girare nel senso orario la manopola di controllo della luminosità situata sul lato destro del terminale.
Il ternimale non si accende quando si preme l'interruttore di alimentazione.	Assicurarsi che il cavo di alimentazione AC sia inserito nella presa di corrente.
La tastiera non funziona e l'indicatore WAIT della tastiera è acceso.	L'elaboratore centrale non risponde oppure ha bloccato la tastiera. Selezionare "Clear Comm" (iniz. com.) sul menù principale (fare riferimento al manuale dell'utente dello SVT-1220). Se il problema persiste, assicurarsi che l'elaboratore stia funzionando.
Vengono visualizzati caratteri confusi o simboli di errore.	Alcune impostazioni del terminale possono essere incompatibili con l'elaboratore centrale. Visualizzare i menù di impostazione e controllare le impostazioni richieste per il collegamento con l'elaboratore centrale (fare riferimento al manuale dell'utente dello SVT-1220).

Sostituzione dei tasti

Le seguenti istruzioni spiegano come togliere i tasti della tastiera nord americana e sostituirli con quelli di un'altra nazionalità.

Il contenitore di spedizione dovrebbe contenere:

- Attrezzo per togliere i tasti
- Busta dei tasti
- Due etichette
- Lo SVT-1220 con le illustrazioni della tastiera

Rimozione dei tasti

1. Spegnere il terminale.
2. Scollegare il cavo della tastiera.
3. Identificare i tasti da sostituire (i tasti bianchi nella figura 1 sul retro del foglio delle istruzioni).
4. Inserire i due capi dell'attrezzo per la rimozione dei tasti sotto i lati più corti del tasto. Tirare verso l'alto verticalmente per estrarre il tasto.
5. Ripetere i passi da 1 fino a 4 per ogni tasto da sostituire.

Sostituzione dei tasti

1. Identificare le locazioni dei nuovi tasti (i tasti bianchi nella figura 2 del foglio delle istruzioni).
2. Posizionare il tasto sul perno. I caratteri sono di solito a sinistra.
3. Spingere fermamente il tasto sul perno.
4. Ripetere i passi da 1 fino a 4 per ogni tasto da sostituire.

Fissaggio delle etichette

1. Le due etichette sono adesive sul retro. Staccare l'etichetta corta dalla carta di supporto.
2. Piegare delicatamente l'etichetta ed attaccarla sul lato sinistro e quindi sul lato destro.
3. Premere fermamente sull'etichetta per appiattirla.
4. Ripetere i passi da 2 fino a 5 per attaccare l'etichetta lunga.
5. Collegare il connettore della tastiera.
6. Accendere il terminale.

Introducción

Este manual provee la información básica necesaria para la instalación del Terminal Video SVT-1220 SPERRY. Se puede conectar una impresora, que es opcional, al terminal, para imprimir desde el ordenador o desde la pantalla.

La caja contiene:

- monitor sobre base inclinable y giratoria
- teclado de perfil bajo, el cual se conecta a la base del monitor
- documentación para el usuario
- formulario de autorización para reparación fuera del sitio

NOTA:
Almacene los materiales de embalaje y el formulario de autorización para reparación fuera del sitio, en caso de que tenga que enviar el terminal para repararlo.

Este manual provee información para la conexión del teclado, del ordenador, de los cables de la impresora y para el ajuste del monitor. También explica la autoprueba del terminal SVT-1220 que se realiza cuando éste se enciende. Además, describe procedimientos sencillos para la corrección de problemas que pueden ocurrir. La última sección muestra cómo reemplazar las cubiertas de las teclas para cambiar el teclado básico norteamericano por otro teclado con una distribución diferente.

La guía del usuario del terminal SVT-1220 SPERRY, UP-11205 (versión actual), provee la información adicional requerida para completar la instalación del terminal.

Conexión del terminal

1. Verifique que el interruptor de alimentación, ubicado en la parte posterior de la base del terminal (Figura 1), esté en la posición OFF (apagado).

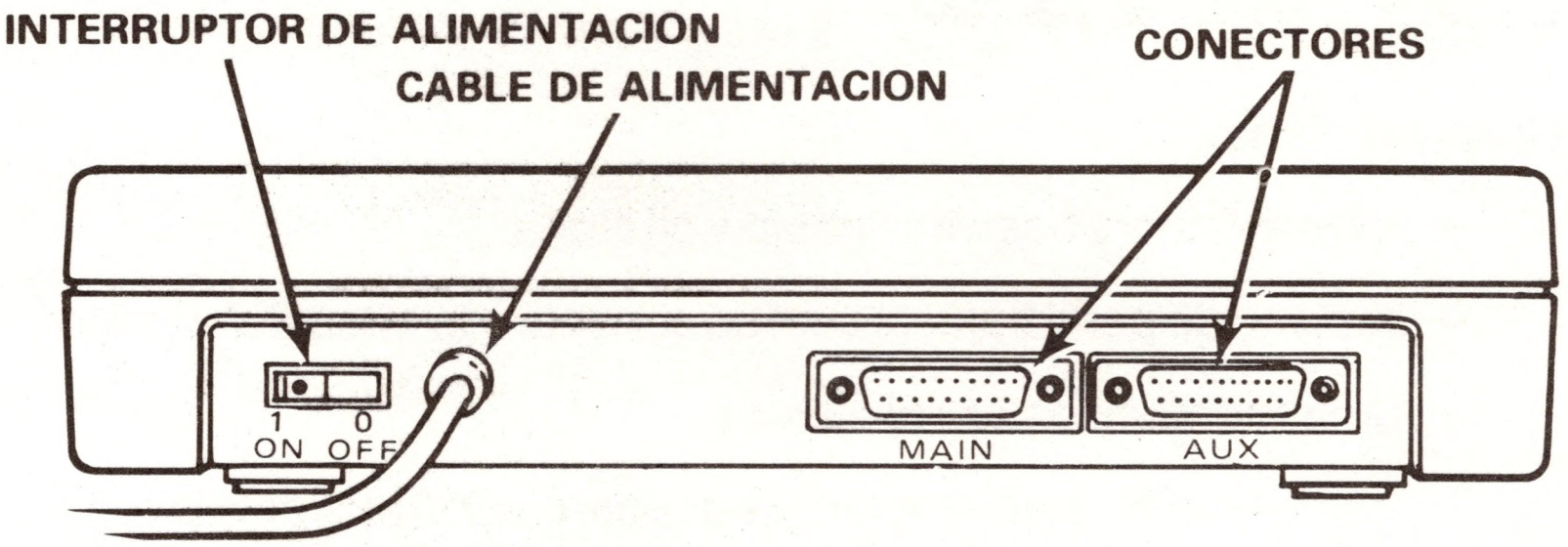


Figura 1. Vista posterior de la base del terminal

2. Conecte el cable retráctil del teclado al conector del lado izquierdo del terminal (Figura 2).

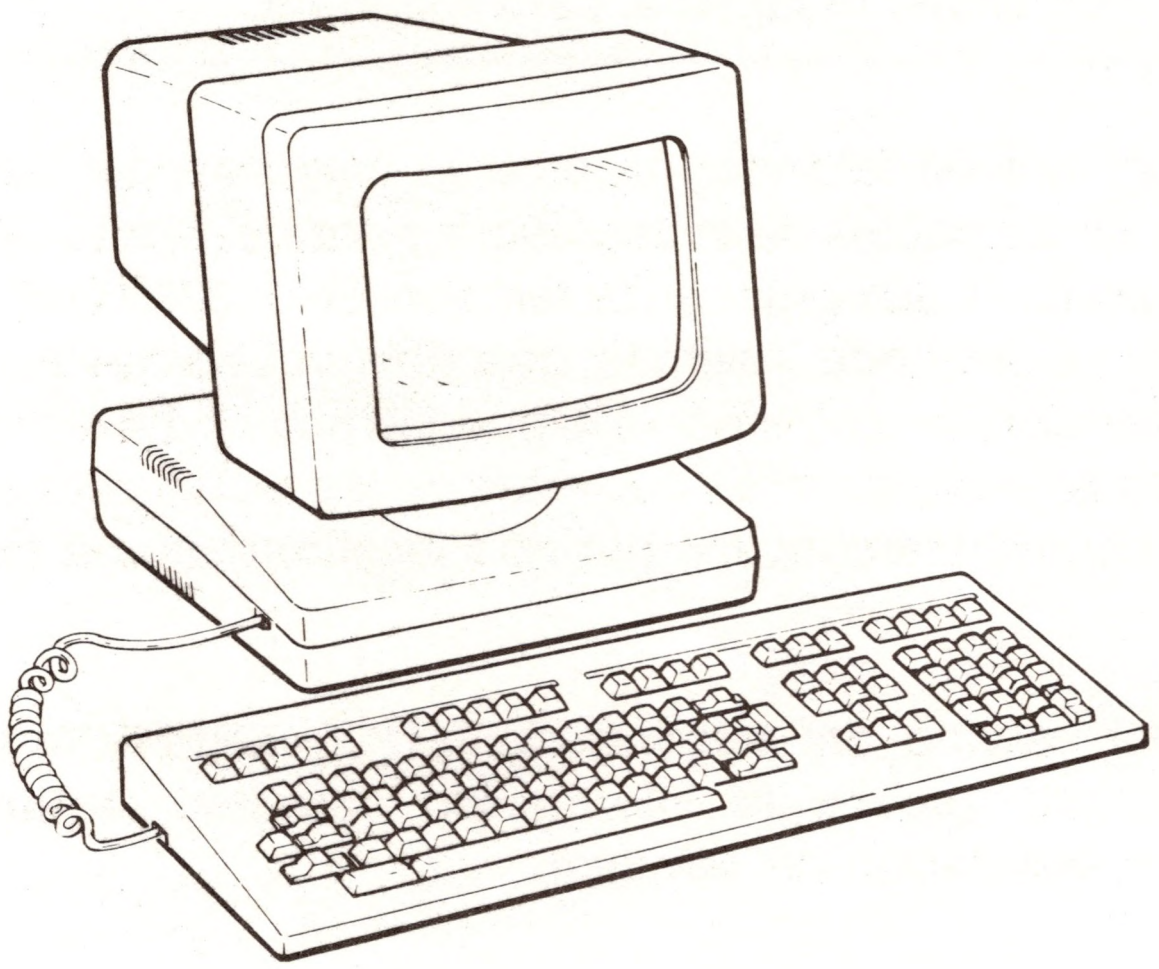


Figura 2. Monitor y teclado del terminal SVT-1220

3. Para determinar cómo debe conectar el terminal, revise la guía de instalación del sistema central, pregunte al programador del sistema o consulte la guía del usuario del terminal SVT-1220, para obtener información acerca de los modos de comunicación. Las alternativas son:

Si se conecta a:	**Use el conector:**
Un sistema central	MAIN o AUX
Dos sistemas centrales	MAIN y AUX
Un sistema central y una impresora	MAIN para el sistema; AUX para la impresora

4. Si conecta una impresora al terminal, conecte el cable de comunicaciones del sistema al conector MAIN y el cable de la impresora al conector AUX, ubicados en la parte posterior de la base del terminal.

5. Si conecta el terminal a un sistema central sin impresora, conecte el cable de comunicaciones del sistema al conector MAIN o al conector AUX.

6. Si conecta el terminal a dos sistemas centrales, conecte el primer cable de comunicaciones del sistema al conector MAIN y el segundo cable al conector AUX.

7. Conecte el cable de alimentación del terminal a un tomacorriente de corriente alterna con conexión a tierra.

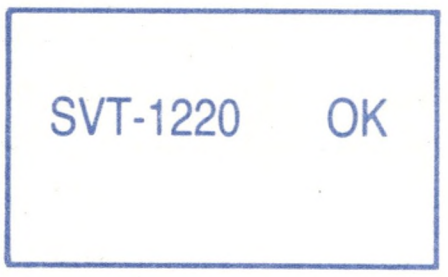
8. Gire el monitor hacia la derecha o hacia la izquierda e inclínelo de manera que obtenga el mejor ángulo de visión.

NOTA:

La instalación del terminal no está completa, hasta que las características requeridas para comunicación con el procesador estén establecidas de acuerdo con los procedimientos descritos en el capítulo 3 de la guía del usuario del terminal SVT-1220.

Activación del terminal

1. Encienda el interruptor de alimentación, ubicado en la parte posterior de la base del terminal (ver figura 1).
   El terminal realiza, automáticamente, la autoprueba inicial de funcionamiento. Si esta prueba tiene éxito y el terminal está listo para funcionar, el siguiente mensaje se visualiza en el centro de la pantalla.



   El mensaje "OK" se borra cuando pulsa cualquier tecla.

2. Si se visualiza cualquiera de los mensajes que se muestran en la Tabla 1, el terminal no está listo y una acción correctiva es necesaria. Consulte la sección que sigue.

Corrección de fallas

La autoprueba del terminal identifica varios problemas que pueden ocurrir. La Tabla 1 muestra los mensajes de error de la autoprueba y las acciones correctivas sugeridas. La Tabla 2 identifica otras indicaciones que pueden ocurrir y las acciones sugeridas para corregirlas.

Si ocurre un problema, ejecute la acción correctiva apropiada, luego apague y encienda de nuevo el terminal para que la autoprueba se efectúe. Si el problema persiste, comuníquese con el Centro de Apoyo de Sperry.

Tabla 1. Mensajes de error de la autoprueba y acción correctiva

Mensaje de error	**Acción correctiva**
Error KBD	Apague el terminal. Conecte el cable del teclado al conector del terminal. Encienda el terminal.
Error ROM	Apague y encienda el terminal.
Error ARAM	Apague y encienda el terminal.
Error CRAM	Apague y encienda el terminal.
Error SRAM	Las características almacenadas en la memoria no volátil RAM (NVR) han regresado a sus valores predeterminados; puede ser que estos valores no sean los valores bajo los cuales necesita operar. Consulte el terminal SVT-1220 y siga las instrucciones de instalación del terminal.

Tabla 2. Acción correctiva para otros problemas

Indicaciones	**Causas posibles y acción correctiva**
La pantalla se borra; el indicador POWER (alimentación) del teclado se enciende.	El conservador CRT ha borrado la pantalla. Pulse cualquier tecla. Si la pantalla sigue en blanco, gire hacia la derecha, el control de luminosidad, ubicado al costado derecho del monitor.
El terminal no enciende cuando se pulsa el interruptor de alimentación.	Verifique que el cable de alimentación esté conectado a un tomacorriente de corriente alterna.
El teclado no responde; el indicador Wait (espera) del teclado se enciende.	El ordenador central no responde o ha bloqueado el teclado. Seleccione "Clear Comm" (borrar comunicación), en la pantalla del menú principal, (consulte la guía del usuario del terminal SVT-1220). Si el problema persiste, verifique si el sistema central está funcionando.
Se visualizan caracteres mutilados o símbolos de error.	Algunas características del terminal no son compatibles con el sistema central. Visualice el menú de pantallas y verifique las características requeridas para comunicación con el procesador (consulte la guía del usuario del terminal SVT-1220).

Reemplazo de las cubiertas de teclas

Las instrucciones que siguen explican cómo retirar las cubiertas de las teclas del teclado norteamericano y cómo reemplazarlas para obtener un teclado nacional.

Debe tener los siguientes artículos:

- cinta para retirar de las cubiertas de las teclas
- bolsa con las cubiertas de las teclas
- dos bandas con etiquetas
- el SVT-1220 con las ilustraciones del teclado

Remoción de las cubiertas

1. Apague el terminal.
2. Desconecte el cable retráctil del teclado.
3. Identifique las cubiertas que debe cambiar (las teclas blancas en la figura 1, en el reverso de la hoja de instrucciones).
4. Inserte las gazas de la cinta que se utiliza para retirar la cubierta de la tecla, en los lados angostos de la tecla. Tire hacia arriba para sacarla.
5. Repita los pasos del 1 al 4 para cada cubierta cambiar.

Reemplazo de las cubiertas

1. Identifique la ubicación de cada cubierta nueva (las teclas blancas en la figura 2 de la hoja de instrucciones).
2. Coloque la cubierta en su puesto. Los caracteres generalmente están a la izquierda.
3. Presione la cubierta firmemente hacia abajo.
4. Repita los pasos del 1 al 4 para cada cubierta a reemplazar.

Inserción de las bandas con etiquetas

1. Las dos bandas de etiquetas son adhesivas. Despegue la banda de etiquetas pequeñas del papel.
2. Doble un poco la banda de etiquetas y deslícela en el lado izquierdo del área apropiada.
3. Deslice el lado derecho de la banda de etiquetas pequeñas en su lugar.
4. Presione la banda firmemente, para aplanarla.
5. Repita los pasos del 2 al 5, colocando la banda de etiquetas grandes en el lado derecho.
6. Conecte el enchufe del cable del teclado.
7. Encienda el terminal.